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Teaching the People of America To "Save with Steel"

Steel Industry Cannot Afford To Neglect Trade Extension Activities —Must Create Consciousness for Steel Products To Maintain Steel Against Competition

By George H. Charls

President, National Association Flat Rolled Steel Manufacturers

> Neither do men light a candle and put it under a bushel, but on a candle stick, and it giveth light unto all that are in the house.

IF IT is good business for an industry to spend millions of dollars annually for maintaining and improving plant machinery and equipment, is it the part of wisdom and foresight to make no provision whatsoever for maintaining and improving the markets for its products? Concentrated upon the problems of production and engrossed with the fierce competition for existing tonnage, the steel industry has been only slightly aware of the minacious encroachment of competitive products in the markets once dominated by steel. It has been woefully remiss in employing the methods which other market-minded industries have found efficacious in creating new demand.

There is no excuse for mass production if the end is not to better fill a demand at a profit.

In an article entitled, "After Mass Production—What?" Paul M. Mazur states:

"Mass production now exists, and will exist only as a result of constructive and accurate sales planning. It is not and will not be a primary cause of sales volume and industrial prosperity. In the skill of consumer market analysis and in the ability to make a product which will appeal to that market are the keys of business success. By the holders of those keys the magic cave of mass production can be opened; but by those alone. For those who possess the machinery of mass production without the necessary keys for unlocking the storehouse of consumer sales, the factory wheels will but rust in disuse, and the operating statements will tell sad news indeed to the stockholders."

Other industries, instead of adopting tactics of the jungle, have pursued the more enlightened, intelligent course and have been equal to the task of creating new markets and increased demand through collective efforts, but the producers, fabricators and distributors of steel have viewed business solely from the standpoint of production and tonnage, "from the angle of unbridled destructive competition and it seems impossible for them to realize that co-operation, rather than savage ruinous competition, is the law of life."

The secret of success in the steel business is not to be found in the waging of war, for fighting only

begets fighting; rather it is to be found in a mellower competition, in submerging individual selfishness and seriously supporting all co-operative movements tending to improve industry as a whole.

As has been so well said, "It is disintegrating individualism that weakens the economic structure, lacking the moral cement of contact that makes willful individuals constructive agencies."

Only ruin can result from the uncautious scramble for a greater production than the demand justifies; any other deduction or conclusion—moral or economic—cannot evolve to the good for the whole. What is not good for the whole industry of a certainty cannot for very long be good for the individual corporation. Obviously, what is good for the whole industry, must of necessity be good for the individual corporation. An unprofitable prime industry is a menace to the prosperity of a nation.

What is needed is "a little more 'we' and a little less 'I.'"

In such a code lies the most promising possibility of truly satisfying the worthiest aspirations, highest ambitions and the best interest of the producers, workers and consumers.

* * *

THESE prefatory premises must be conceded before any collective trade promotion and educational campaign can be intelligently and successfully launched. If the aggregate industry—producers, fabricators and distributors—will only acknowledge that it has been negligent in building demand while it has been building furnaces, mills and indecorous competition; if it will but recognize it cannot successfully or commendably carry on unless the demand is materially increased, it will then resolve to use all its collective and united power to energize, intensify and extend its distribution and markets. This, then, is the one remedy by which the industry can regain its lost prestige and the individual corporation find opportunity to earn more for its stockholders than the return they could readily realize in a safe government bond.

John Cotton Dana, in his book, "Business the Civilizer," says:

"Business has wings. The new American tempo is manifesting itself in a number of interesting ways. First, in the public's disconcerting willingness to turn its back on established customs, products, methods, ideas, etc. Second, in the public's promptness amounting to almost aggressiveness, in accepting new products, new methods, institutions and ideas."

For a long time the demand for steel products grew with an ever-increasing acceleration. New uses continued to pile up and production kept pace until demand and production attained tremendous volume. This period had not reached its full growth when other industries started to produce substitutes for the very products and commodities which had contributed so much to the growth of the steel industry. Millions of tons of products formerly made from steel now are being supplanted by cement, felt, paper, composition, gypsum, aluminum, clay products, copper, brass, etc. Each of these industries have, by individual or collective trade promotion, educated and influenced the public to desire their commodity in preference to a product made from steel and they are continuing to do so with more power and force each year.

This intercommodity competition is taking a serious turn in many markets, and industries as a whole are awakening to the necessity of meeting it in a collective way. So it must be with steel if it hopes to hold its own, if consumption and production are to be equalized, and if the demand of steel is to be revivified and the vigorous support of the fabricator and distributor enlisted. This, obviously, does not apply to those products which hold the impregnable position where there is no substitute for steel, as in steel rails. It most decidedly does apply to every steel product where there is or can be substitution.

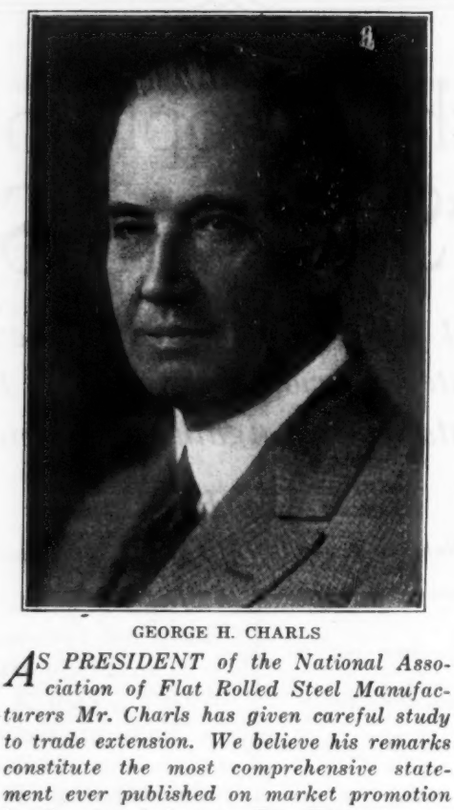
It must be apparent that some of these substitutes may actually serve the purpose better than steel in special fields, or, if not better, be so much cheaper as to influence their use. It is likewise true that there must be unlimited fields and markets in which steel products will serve the purpose better or command the business by reason of a lower cost.

Can the steel industry afford to disregard what other industries are finding an effectual method of retaining and increasing their markets, and pass up the illimitable opportunities it possesses to serve more with steel, and to indemnify its pregnable markets?

For the fiscal year ending June 30, last, the gross cash farm income is estimated at $10,360,000,000. Our wheat crop was the largest since 1923; our cotton crop was about 15 per cent larger than in 1927; our barley crop was the largest on record. The estimated value of crops in the year of 1928 was 8.0 per cent higher than 1927, and the estimated gross cash income for the year, ending June 30, 1929, is $10,550,000,000. The building program for 1928 was estimated at $7,000,000,000.

Ninety per cent of those employed in the United States are capable of a far from limited buying program in dealing with the manufacturer and the merchant who can successfully present his sales message to them.

In addition to the growing buying power of the individual American family we must not overlook a natural increase in the consumer market of 6000 customers daily, a total of 2,000,000 persons annually who must be educated as specifiers and buyers of established merchandise. There are somewhere near 1,250,000 marriages taking place yearly; there are some 2,000,000 families which move every twelve months into new homes or new apartments, thus making necessary the purchase of an incredible volume of merchandise, raw material and trade-marked goods of every descrip-



GEORGE H. CHARLS

AS PRESIDENT of the National Association of Flat Rolled Steel Manufacturers Mr. Charls has given careful study to trade extension. We believe his remarks constitute the most comprehensive statement ever published on market promotion by the steel industry.—THE EDITORS.

tion. An authoritative and close observer of the trends in the steel industry writes:

"No industry can afford to neglect its markets for fear a rival industry may step in with a substitute product and squeeze it out. Owing to the vigor with which scientific research and engineering development are directed today an industry must be on the alert to watch every new process or product that may affect its markets—as an example—a flexible synthetic material in the form of tubes is being placed in mines and other underground workings to assist in ventilation. It does not require much imagination to conceive that this fibrous material or a similar one might rise up overnight and seriously cut into the markets for steel."

Merle Thorpe, editor, *Nation's Business*, says, "It is a wise man who knows his markets. It is a foolish man who believes his markets of today will be his markets of tomorrow."

Steel must create business or live on half-fare.

Speed, chance and quantitative production call for a new deal in sales policies; understanding and conformation to the changing competitive conditions—the tremendous influences seeking the consumer's dollar.

The steel industry must now become sales-minded as it was production-minded, cognizant of the necessity of increasing demand rather than swapping customers, and blindly bidding itself into a morass of despond and sloughs of impoverished earnings. No longer can it proceed with no more appeal to the imagination of the consuming public than that offered by the peanut vendor. It must wrap the products made from steel with ideas.

The public is not interested in "black sheets," but steel lath that gives "a better plastered wall"; it is not interested in "full finished sheets" but in "durable" desks and office equipment; not in "blue annealed sheets" but in "uninflammable" and "space-saving" shelving for storage; not in "plates, strips or sheets" but in "fireproof" hollow steel doors and steel trim and in stampings pressed from steel which "reduce the cost and weight" of equipment.

It has been said many times that commodities are sold either by the "push" method or the "pull" method. The "push" method means that the manufacturer devotes his energy to manufacturing and financing, making as good a product as he can and selling it as cheaply as he can. Someone else then sells his product in some shape or other to the public. Obviously, the manufacturer is in the hands of other business factors, these factors, because of their control of the consuming market, control the business situation. Recognition of this economic condition has caused many manufacturers to take on added responsibilities in an endeavor to make contact with and win the understanding of the public.

This monthly magazine is published by the Sheet Steel Trade Extension committee

The "pull" method simply means that the manufacturer creates a consumer knowledge, acceptance and demand for his product so that those consumers help to pull the product out of his factory. The consumer calls upon the retailer for the merchandise; the retailer in turn places his demands with the wholesaler, the jobber or with the manufacturer direct.

Let us realize that it is the public which, in the last analysis, by buying or refraining from buying, directs in a large measure the destiny of our industry. The public can be educated, and led away from an established fashion, habit or custom through the influence of trade and consumer advertising.

"No idea ever took shape in the brain of man that cannot be conveyed to another man in words and pictures." The mind of the man who buys must be ideated with the utility, strength and beauty of "Products made from Steel" through collective educational and promotional effort to the end that the market for steel shall be stabilized, extended and the public made steel-minded, steel-disposed, conscious and aware of all its splendid properties and advantages.

Trade promotion is essentially the collective action of an industry which focuses attention on all the problems having to do with sales, distribution, markets, products, salesmanship and advertising. It engenders a more profound knowledge of all the influences affecting the broad and general demand for the commodities of the industry. It brings together the sales executive of the industry into regular periodical conferences for the interchange of constructive ideas, to collectively solve the intricate problems of marketing, and promulgate truer understanding of the principles of salesmanship. Likewise, it regularly brings together the advertising executives of the industry for the joint study of the best means of employing the resources devoted to advertising, to concentrate its advertising program in the markets offering greatest opportunity, and to co-ordinate in the best possible manner the educational and advertising activities of producers, fabricators and distributors.

It is to be regretted that to many, trade extension is abstruse and means little but a printed page in a national magazine or newspaper. This impression must be dissipated, dismissed and forgotten. It must be supplemented by a true understanding and appreciation of more fundamental nature of the up-to-date methods of conducting such work.

A vast amount of information, statistics and market research must be persistently sought, compiled and put to work. Trade promotion has a vastly broader and deeper significance than the advertising copy and the display page, although newspaper and magazine advertising has become the text-book, the catalog and specification manual of the American public with tremendous influence on its buying habits.

Trade extension and promotion involves facilities for conducting a run-

ning inventory of the effects of the kaleidoscopic changes in established customs and habits through a division devoted to trade research and market analysis.

As one example, building codes in the municipalities throughout the nation are undergoing constant change, some intentionally or unintentionally inimical to present uses of steel products; others unmindfully or uninformedly limited and narrow in recognition of the uninflammable, sanitary, safety-assurance of steel construction, equipment and products.

Eternal vigilance on the part of producer, fabricator and distributor is the only guarantee of fairness and protection against the injustice and fallibility of national, state, county and civic specifications and laws governing the use of steel products. Cooperation with the Underwriters' Laboratories, the National Fire Protection association and other national and state agencies, having to do with codes and specifications, is a means of holding and extending the uses of steel.

Market analysis involves a study of the present outlets for steel and suggesting improvements in the methods of distribution, working with the distributors' organization to broaden and increase the demand.

For example, steel trim, doors, windows, shelving and steel lumber fabricators are seriously handicapped in promulgating sales, due to the inability of union officials to determine and definitely rule which branch of their union shall do the work. Steel trim was eliminated from the specifications of the Palmer House in Chicago because of such indecision and disagreement in the unions of that city. Here is another avenue which co-operative effort can make passable through friendly pressure and logical reasoning with those responsible for the obstacles—the jurisdictional disputes of the unions.

Would Be Valuable Adjunct

Another division devoted to research into new uses and new products can enhance the uses of steel in a variety of ways and render illimitable service to all. Assume that an automobile manufacturer makes a radical and beneficial change in the construction of a car by substituting a forging or pressed metal part in place of some other material. An engineer, capable of making a study of this change and imparting its value to others makers, would be a valuable adjunct to trade extension, as would similar engineers studying the railroad, electrical and agricultural industries—the effort always being to enlist the support of the fabricators of that particular industry to carry on the experimental work. This division also would cooperate with the Underwriters, Bureau of Standards, Farm bureau and similar institutions.

Some automobile companies have adopted steel for the body and top frame work of their all-steel cars in the interest of durability and safety. Why do not all automobile manufacturers pursue this same practice?

Experience teaches that an all-steel roof, properly grounded, is a protection against lightning on a farm. What scientific data has the steel industry to support this experience? What effort is being made to secure it?

Steel Affords Protection

The uninflammable nature of steel construction equipment and products is both a protection against and retardent to fire. How may the underwriters and insurance companies be persuaded to further recognize this attribute in lowered insurance.

The field for trade research and market analysis is unlimited in opportunity to expand the use of steel—and, is the corollary of trade promotion.

The manufacturers of sheet steel promulgated a trade extension program in 1924 under the supervision of the sheet steel trade extension committee. Under trying circumstances and without the best support on the part of its individual manufacturers a remarkable interest has been aroused in the extension of the uses of sheet steel.

The average shipments of the three-year period in which this work was carried on exceeded the average shipments of the previous three-year period by 832,000 tons. What percentage of this increase may be due to the efforts of this committee is unknown, but this fact is clear: The trade extension program has definitely increased the use of sheet steel and warded off the encroachment of substitute products.

Encouraged by the success of the sheet steel industry, the National Association of Flat Rolled Steel Manufacturers, in convention at White Sulphur Springs, Va., in June, concluded that it would know its markets, i.e., could not with impunity continue to foolishly believe its markets of today would be its markets of tomorrow, and it endorsed, in principle, a trade extension campaign.

With the determination to *know, energize, intensify* and *extend* the markets for products made from flat rolled steel, it has outlined a plan and a method which gives promise of immediate results.

Its first move was to set about to create a *steel-awareness*, a *steel consciousness* among the hundreds of thousands of men who owe their livelihood, welfare and happiness to steel, and among the corporations producing and using steel.

The letter reproduced on page 777 explains the object and purpose of this first approach and is a constructive message to every producer of steel.

The second plan was to inaugurate closer contact through a series of conferences with groups of distributors and fabricators of steel products; to ascertain their problems and needs—their very personal and direct knowledge of the trends and obstacles in the way of broadening markets; the character and methods of competing products and industries; the best fields for expanding the use of steel products; the efficiency of present channels of distribution and the way to improve them; the distributor's attitude and viewpoint on building a greater demand in the present market and his idea as to the possibilities of new products in new markets.

This work is now in progress among the following major industries and their distributors: Stamping and Pressed Metal association, Metal Lath association, Radiator Cover association, Warm Air Heating & Ventilating association, Metal Door and Trim association, Steel Furniture association, Metal Ceiling association, Sheet Metal Workers association, Metal Roofing association, and National Hardware Jobbers association.

Co-operation Is Assured

It is the definite purpose to energetically co-operate with these associations which are well organized and are conducting trade promotion campaigns. Some, like the Metal Lath association, are doing a splendid work. This association is expending ¼-cent per yard of lath, or approximately $2 per ton and $200,000 per year, and has increased the demand for metal lath tenfold in nine years.

The same results are possible for other associations which may conduct an intelligent trade promotion work. It shall be the purpose to assist and encourage those associations which are either inert or antipedal to trade extension activities.

It shall be the further purpose to assist and encourage other fabricators of steel who have no contact, to organize associations and insofar as possible galvanize their activities in

in the extension of their markets.

With these efforts shall be coupled consistent and persistent endeavor to bring the producers of steel and the fabricators and distributors thereto into closer contact and harmony, unity of thought and purpose, mutual understanding and respect, joint effort and aggressive co-operation.

Coincidentally, the statistical and intimate information obtained from the fabricators and distributors is being passed to the producers of flat-rolled steel to the end that they may be well fortified and prepared to do most effective work in their individual advertising and that they may see the wisdom and use best judgment in advertising the commodities made from flat-rolled steel instead of the plain raw material which in no wise tends to build a steel-consciousness or to increase the demand.

A booklet entitled, "Making Markets," is distributed monthly to 25,000 fabricators and distributors of steel products. This magazine contains the essence of all new ideas gained through contact with fabricators and distributors. In it are shown the names of contributing steel companies. It is essentially a book of ideas, purposive to be helpful and constructive in pointing the way to new markets and more effective merchandising policies.

The advertising counsellor is constantly in touch with the problems that arise—analysing, advising and directing, preparing copy, choosing the mediums and placing the advertisements where it is deemed they will produce maximum increase in tonnage for least and most judicious expenditure of funds.

It is planned to carry on industrial research with the assistance of the fabricators, who, in associate or individual equipment, are prepared to conduct necessary experiments in improving old products or producing new articles made from steel. In this way products are standardized, simplified and made more readily marketable.

Market and trade surveys are being secured through the fabricators, distributors and the advertising counsellor.

Thought Creates Acts and Habits

All voluntary acts are preceded by thoughts and ideas. If the great industrial and consuming public is to acquire the habit of preferring and demanding products made from steel, its attention must be arrested and its thought directed in a persistent and methodical manner so that it may constantly have a mental image of the superlative merits of such products because "thoughts are colored by the things they dwell upon."

No steel ingot producer is free from such concern in the welfare of the whole. The steel ingot capacity of the country is the high pressure reservoir which demands that outlets must be provided. It matters little what form the finished product takes. Those feeling secure and unaffected in producing a product which is in good demand today will find others vying for their market tomorrow if the ingot capacity of such others cannot be absorbed in their own market.

For a time it appeared unnecessary for the manufacturer of automobile sheets to contribute to the advertising of galvanized roofing until he found the equipment of the galvanized sheet producers being utilized to produce automobile sheets.

The producer of universal plates was not interested in the efforts of the hot-rolled strip manufacturer to increase his market until hot-rolled strip began to replace universal plates.

Interests Are Interrelated

The alloy steel manufacturer was indifferent to the efforts of the common steel bar producer to increase his markets until such producer began to make alloy steel, and so on through the industry.

The interests of all steel ingot producers is inter-related and bound together.

The multiplicity of interests which so aggressively assail and compete for the attention and dollar of the man who buys in this new American tempo sternly accentuates the need of collective action.

The man in the woods with a better mousetrap had better organize to ring doorbells, or the man with a mediocre and cheaper mousetrap but with far-flung sales nets, will prevail.

NATIONAL ASSOCIATION OF FLAT ROLLED STEEL MANUFACTURERS
TERMINAL TOWER BUILDING
CLEVELAND, O.

Acme Steel Co.
2840 Archer Ave.
Chicago, Ill.

Attention Mr. F. C. Gifford
Vice President

Gentlemen:

It has been pointed out by a number of fabricators of our material that the manufacturers of flat rolled steel have frequently been criticized for not showing the proper interest in the use of their own products. In some cases, criticism is merited, but in a great many others, the point is well taken. Steel desks, letter file cabinets, clothes cabinets, partitions for buildings, doors, frame and trim for buildings, lath, shelving, bins, lockers -- all represent large tonnages for flat rolled steel in markets offering an opportunity for very much greater development.

The fabricators of these products should have the moral support of our own people from the top of your organization to the bottom. The tremendous human force interested in the steel industry should be taught to think in terms of the product on which their livelihood depends -- all-steel automobiles as against substitute materials, steel medicine cabinets, steel kitchen equipment, and many other articles necessary to their daily existence, should be uppermost in their minds when making their purchases. Your own attitude toward steel products will be the attitude of those around you and working with you.

May we count on your support in crystallizing this idea in the minds of the various members of your organization?

Yours very truly,

NATIONAL ASSOCIATION OF FLAT ROLLED STEEL MANUFACTURERS

A N Flora

Vice President

AN Flora am

To produce something better is not enough; it is only an invitation to educate the public to its superiority, make it easily obtainable and sell it better.

In the past, trade promotion has been experimental—there was no precedent—nothing to read and go by. This no longer is true. It is estimated that the expenditures of group advertising in 1928 will total between eight and ten millions of dollars.

A questionnaire submitted to 91 associations elicited many interesting answers. These replies forcefully present concrete evidence of standardized programs, based upon years of experience, with the definite results obtained through regular methods of procedure. An epitome of these trade promotion activities may be found in a booklet entitled, "Experiences of Associations in National Advertising," 3rd Edition—April, 1928—published by the Periodical Publishers' Association of America, 8 West Fortieth street, New York, and in the Addenda to this paper.

The American Bankers' association has a division devoted to the trust companies of that association. These trust companies have deemed it practicable to collectively educate the public through national magazines, direct mail and in the development of suggestions for each to use as they see fit.

The far greater knowledge that is prevalent concerning banks acting as executors of wills, trustees of estates, custodians of securities under agency agreements, living and personal trusts, and things of that sort, comes about through the associated trade extension efforts of the banks.

Advertising Is Necessary

Good cement commendably met many requirements, but it was necessary for the industry to develop concerted action before the public appreciated "Cement for Permanence," its utility and variety of uses.

Excellent paint had been made for a long time but the industry only came into its own through the judicious expenditure of large sums to educate the public to its greater use through "Save the Surface and You Save All." In the five-year period, at the cost of one-eighth of one per cent of members' sales, consumption of paint was nearly doubled.

Metal stampings were just metal stampings until "Press it from Metal Instead" brought proper recognition of their versatile utility and service.

The aluminum industry is organized to extend its markets and today is precociously prognosticating the all-aluminum automobile. The lumber industry is alive to the necessity of intense co-operation to protect its markets from the inroads of competing products, while the brick industry is organized to increase demand for brick.

The outstanding and remarkable success of numerous industries in extending their markets through collective trade promotional activities is a remarkable testimony to the effectiveness of collective action in educational and trade extension work.

The trend of commodity competition no longer leaves collective industrial trade extension a debatable or moot question. It has become an unescapable obligation. To prognosticate or evade such an obvious obligation might very well be considered by those inclined to judge harshly, a reprehensible neglect of a superlative duty, a lack of vision and foresight.

If every objection must be overcome in advance, nothing will ever be attempted. Vision must extend beyond what we clearly see. Maintenance of an industry's market must be as important as the maintenance of plant, machinery and equipment—just as necessary to its successful functioning.

For the individual corporation to attempt this task of molding public opinion is unreasonable and unthinkable; it is the business of the industry.

Paul M. Mazur, in his book "American Prosperity," states:

> It is not, however, in *individual* advertising that the great development of publicity appeal to the consumer is likely to take place. It is in the growth of *group appeal* that the artillery of the battle for consumer's loyalty will show the most marked, possibly even radical changes in industrial competition. The movement is bound to become general.

While other industries are at the zenith of their collective trade promotional activities, steel is just at the dawn. This has some advantage in that it may now proceed in the light of the collective experience of others if it can overcome that greatest of human weaknesses, inertia. The paramount requisite for success in trade extension appears to exist in a harmoniously enthusiastic accord as to the purpose and objective, namely the industry's welfare.

Fortified with this *will* the way becomes only a question of applied knowledge.

The Inward Reaction

COLLECTIVE trade extension begets within the industry and the individual more profound and specific knowledge of existing uses and markets, the sympathetic understanding of the problems confronting the fabricators and distributors to those markets, and a keener recognition of its responsibilities to fabricators and distributors. In incites consciousness of the possibility of unrealized and prospective markets. It arouses sales instinct and generates creative thought and action, collective and individual, to serve more people in more ways. It quickens ideation and envisions new products, dormant fields to be explored and developed, loftier ethics and conceptions of merchandising, and lifts it out of the realm of mediocrity into the dominion of a masterful, constructive exploitation.

Would not these inward reactions alone yield commensurate return on all the money that might be expended for the purpose?

Subvention in the form of trade extension will be martial music to the ears of those who have been steadfastly standing the brunt of the attack and defense of steel products alone. Down in the depths of numerous, mammoth organization, courage will be rekindled in the minds of designing engineers who have singlehandedly given so much to the inceased use of steel and to its progress.

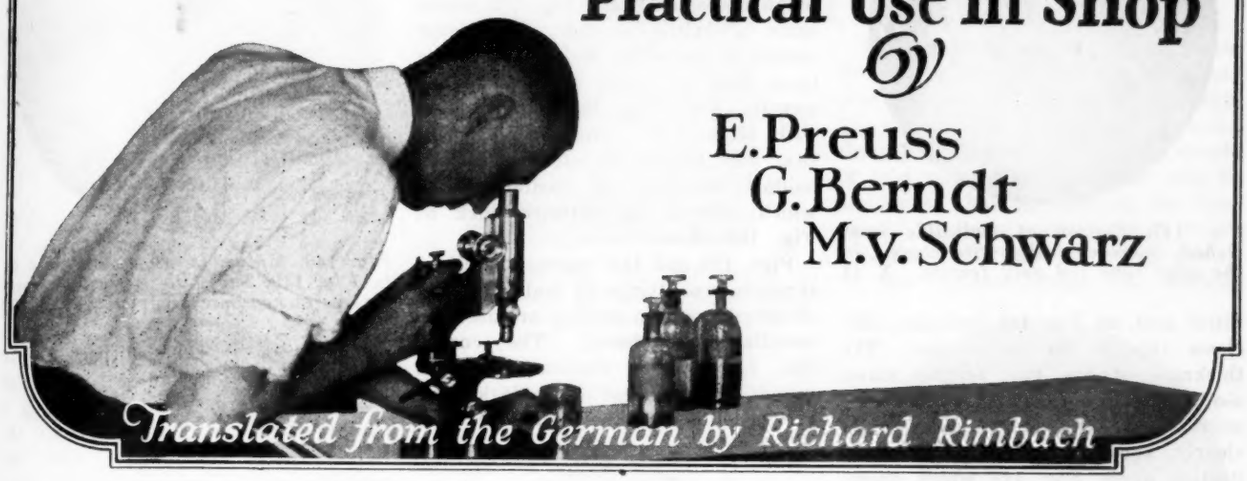
Confidence Wins Clients

Architects and consulting engineers will find the confidence of the steel producer contagious and his support of inestimable value in overcoming the sales-resistance of their clients. Their specifications on steel will be a reflection of their ability instead of being subject to the questioning of an uninformed public. Old and new production, equipment, engineering designing, will be thought of in terms of the strength, beauty, utility, safety and protection afforded by steel and the saving in cost it effects.

Prejudice and misinformation will be dissolved; appreciation and confidence based upon scientific data carefully prepared and presented, substantiated by research experience and true knowledge, will be reborn. New steels will be evolved for new purposes and the question, "Where are the possibilities?" will be overshadowed by the maze of "Where aren't they?"

Steel has made possible the utilization of steam; creation and control of electricity; conquest of land, sea and air in safe transportation; the great depth of mine and well; mass tilling of soil; the towering citadels of the cities; the elevation of labor and the elimination of drudgery in the home. Steel must continue to serve mankind as it was ordained to do.

Metallography Simplified for Practical Use In Shop



By
E. Preuss
G. Berndt
M. v. Schwarz

Translated from the German by Richard Rimbach

Chap. X—Cast Iron (Concluded)

IN THE April 4 issue of IRON TRADE REVIEW *the first installment of Chapter XI in the current series on metallography will be presented. The chapter will deal with the influence of heat treating on the structure of iron carbon alloys. Refinement of the grain structure by annealing and overheating and burning will be discussed in detail.*

SINCE carbon can be added to iron by heating in a carbon emitting atmosphere (cementation), it is possible to partly remove the carbon contained in iron by heating in an atmosphere high in oxygen. This so-called annealing is executed by packing the pieces to be decarbonized in clay, iron or alloy boxes containing iron ore. Annealing continues for about 24 to 72 hours at 960 to 1000 degrees Cent. The cementite is decomposed into ferrite and carbon, which occurs finely distributed in the shape of small round nests (temper-carbon, see Fig. 145). At the edge the carbon of the iron completely burns so that only ferrite remains. Where the action was less energetic, as towards the inside and in the core, temper carbon exists. By burning to carbon dioxide, however, no hollow places are formed, but the ferrite grains again interlock to a large extent. While the structure loosens slightly, due to the large increase of volume at the time the temper carbon is eliminated, it does not go back entirely.[30] Contrary to the carbon produced by the decomposition of the cementite, it is much more difficult to oxidize the graphite of gray iron. Moreover, larger hollow spaces remain which influence the iron unfavorably.

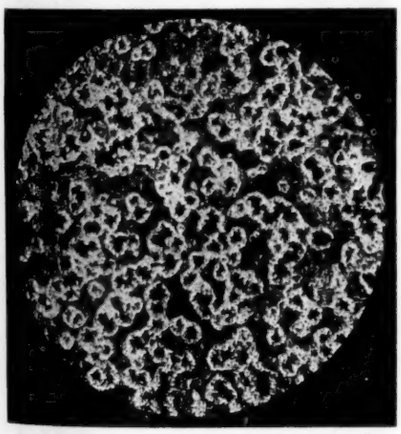


Fig. 145. White iron annealed and etched microscopically. Structure is ferrite, pearlite and temper carbon. X 50 (F. Wuest)

In America, annealing in weakly oxidizing or neutral annealing mediums is carried to the point where the edge is decarbonized. In the core, however, only cementite is decomposed. In this way malleable iron results with a gray core surrounded by a white edge (black heart) and it requires a low sulphur pig iron.[31] In Germany, however, the carbon content generally is reduced 0.9 to 1 per cent in the core by annealing longer. The castings similar to steel castings can be shaped by forging so that in contrast to malleable iron, it would be more correct to designate it as malleable iron. According to Wuest[32] it is however, of no importance to the strength whether or not the temper carbon formed by annealing is completely removed by oxidation.

The thickness of the entirely decarbonized edge zone often can be determined from the fracture. The polished section etched with alcoholic

[30] R. Stotz, *Stahl und Eisen*, Volume 36, page page 501, 1916.

[31] The American annealing takes place more rapidly and requires only about half the fuel. It is therefore, considerably cheaper and can be carried out quicker. It is important that the range is passed slowly during the cooling period.

[32] F. Wuest, Oesterr. Zeitschr. f. Berg und Huettenwesen, 1913, page 178.

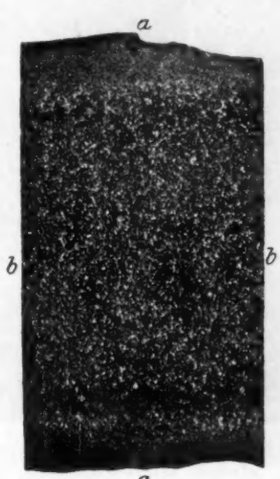


Fig. 146. Cross section of malleable iron, etched microscopically. X 4

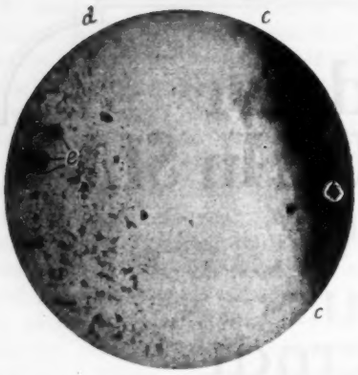


Fig. 147. Section of malleable iron, etched microscopically. Structure: in the edge zone ccd only ferrite. X 44

nitric acid, as Fig. 146 indicates, discloses this to the naked eye. The thickness of the two ferrite zones, *a-a*, can be estimated without the microscope. It can be seen more clearly, however, with higher magnification as in Fig. 147 which shows the material at the edge zone of a malleable iron casting. Between the line *c-c* and the line *d-d* lies the entirely decarbonized edge zone consisting only of light ferrite crystals, while towards the core, pearlite crystals and at *e* isolated nests of temper carbon occur. Here the decarbonization has not progressed as far as in the edge zone.

Fig. 149 shows the core of the malleable casting, using the same magnification. It can be seen that towards the core the carbon containing pearlite, and the number of nests of temper carbon appearing as large, dark round spots have increased. Fig. 148 shows the same piece as Fig. 149 using a still larger magnification which permits recognizing the separation of pearlite into individual lamellae. In addition, some cementite can be seen which should not exist in tough malleable iron. Fig. 150 represents a brittle section of a lever broken in operation and shows in the inner zone a rough network of cementite appearing light on etching with nitric acid. That it is cementite, was proved by etching with a boiling solution of sodium-picrate which colored the network dark as Fig. 152 shows.

Figs. 153 and 154 represent sections through two fittings of malleable iron of different origin as they are used for installation purposes. The curved line, *f-f*, in both illustrations corresponds to one thread. The dark fields are pearlite and the light ones ferrite. The structure of the fittings is entirely different; in the one case it is of fine grain, in the other, coarse grain. The fine grain material has greater strength and hence is preferable. Corresponding to the different size of grain, the size of embedded nests of temper-carbon *g* is different in both pieces.

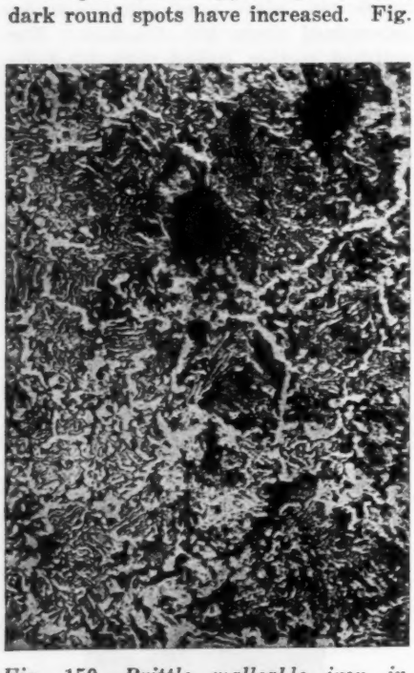


Fig. 150. Brittle malleable iron in section, etched microscopically, shows in addition to the black temper carbon nests and pearlite, a network of cementite. X 150

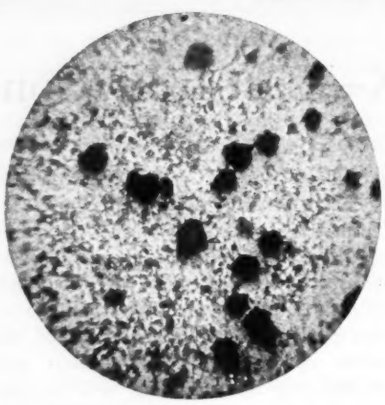


Fig. 149. Malleable iron, cross section; etched microscopically. Core zone. Structure is ferrite, pearlite, temper carbon and small amounts of cementite. X 44

As in every heat treatment of iron the annealing must be performed with the necessary knowledge. If the oxidizing action is too strong as may happen with fresh iron ore, both carbon and iron will be oxidized in the edge zone. Then a malleable iron casting is obtained. The etched section, Fig. 151 shows clearly the different zones. In the first, inclusions of ferrous oxide between the ferrite crystals can be recognized. This slag has accumulated especially between zones 1 and 2 as a dark mass. In zone 2 free cementite crystals appeared as was proved by etching with sodium picrate. These crystals

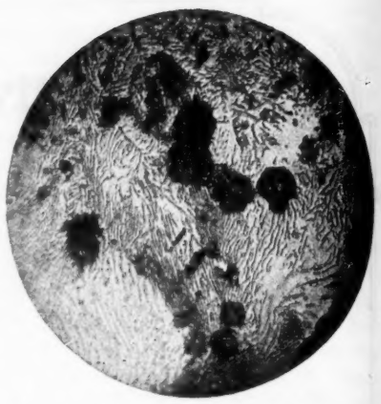


Fig. 148. Malleable iron, core zone as in Fig. 149, but with higher magnification, etched microscopically. X 100

were formed by recarbonizing due to the carbon which had diffused from the core towards the edge. Area *s* contains, as can be seen from the lighter color, pure ferrite, while the pearlitic part *K* contains temper carbon and some hollow spaces.

It may be mentioned that cast material frequently is brought on the market under the name "temper-steel-casting."[33] According to the specifications for material of the German navy, pieces of tempered steel castings should be tempered to conform to steel. That is, carbon should be removed from them only so far. But if the surface is decarbonized too much, sufficient carbon should be restored by resorting to the cementation process, so that the pieces may be hardened throughout. According to the mentioned specifications tempered steel castings should have a tensile strength of at least 35 kilograms per square millimeter and an elongation

[33] Standardization likely will bring about uniform designations.

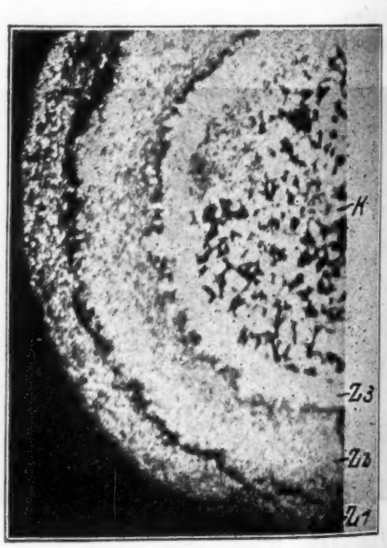


Fig. 151. Section of spoiled malleable iron casting. The specimen was etched microscopically. X 15. (F. Erbreich)

of at least 5 per cent, while for open hearth and bessemer steel a tensile strength of 40 to 55 kilograms per square millimeter and an elongation of at least 18 per cent are required. The tensile strength of cast iron amounts only to about 15 to 25 kilograms per square millimeter and its elongation to less than 1 per cent.

If the oxidation during annealing is too heavy the so-called "soft-skin" (almost pure ferrite) occurs and in machining with cutting tools smears strongly. Moreover, this leaves hard spots in the material. These contain ferric oxide and either wear the cutting edge of the tools badly or make machining entirely impossible.

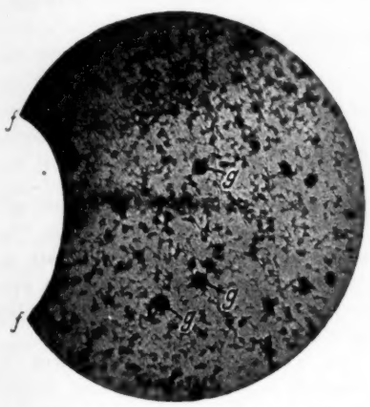


Fig. 153. Fine grained malleable iron fitting in section, etched microscopically, with temper carbon nests at g. X 50

Issues Report on Metals

Department of engineering research, University of Michigan, Ann Arbor, Mich., recently issued engineering research bulletin No. 11 on the stability of metals at elevated temperatures. Two of the outstanding problems at present involved in the use of metals at elevated temperatures are the development of a short time test for determining the load-carrying ability of a metal at these temperatures and the determination of the effect of various alloying elements upon the high temperature stability of alloys. The bulletin explains the method of procedure to secure the data, the apparatus used, the results obtained and a mathematical interpretation of these results. It may be obtained for $1 by addressing the director, department of engineering research, Ann Arbor, Mich.

Employs Roller Bearings

Roller bearing armatures are used in each of the eight motors on the Baldwin-Westinghouse motor generator locomotive which opened the Great Northern's new 8-mile tunnel through

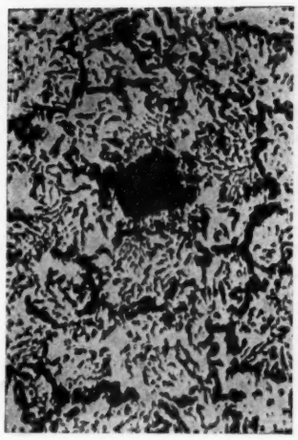


Fig. 152. As Fig. 150, but etched in boiling sodium picrate solution which colors the cementite network dark. X 150

the Cascade mountains. Norma-Hoffmann roller bearings carry the locomotive's 3730-pound armatures mounted on 6-inch shafts. This dimension and the fact that the housing bore for the outer race is 13 inches diameter describe what is one of the largest roller bearing installations for heavy duty. In the passenger service the motor armatures may rotate at a speed up to 1450 revolutions per minute. The eight motors have a combined horsepower, one hour rating, of 4330 and a tractive effort of 112,500 pounds.

Milwaukee Payrolls Rise

A new peak has been reached by employment in Milwaukee industry, the payroll at the beginning of March being 42,143. The same shops in January reported 38,995 at work, and in February, 40,707, making the gain in the past month 1400. In the analysis of employment there has been a decided gain in machinery and engine shops, the automobile industry and in road construction machinery plants. So far this year the average number at work in the shops regularly reporting is 40,615. This compares with an average of 36,886 in 1928, 35,161 in 1927, and 32,628 in 1926. The metal trades industry as a group has shown the most rapid and consistent expansion with consequent additions to payrolls.

Cement Output Declines

Production of portland cement in February was 8,522,000 barrels, shipments totaled 5,448,000 barrels, while stocks at the end of the month were 29,871,000 barrels, according to the federal bureau of mines. In production this was a decrease of 3.1 per ments from last February and in shipments a decline of 17 per cent. Portland cement stocks at the mills were 9.2 per cent higher than a year ago.

Breaks Ground for Six New Sheet Mills

Work recently was started on a new sheet mill unit of the Kokomo, Ind., plant of the Continental Steel Corp. The layout will include six hot mills, three roughing stands and three stands of cold rolls. The equipment will be similar to that installed at the company's Superior works, Canton, O.

Modern buildings are being erected by the Indiana Bridge Co., Muncie,

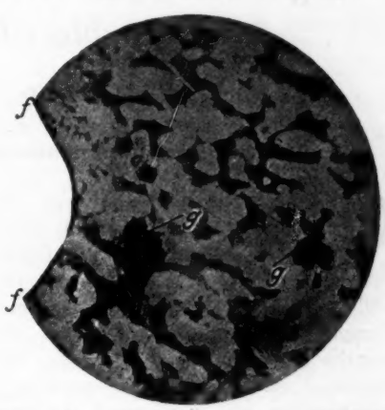
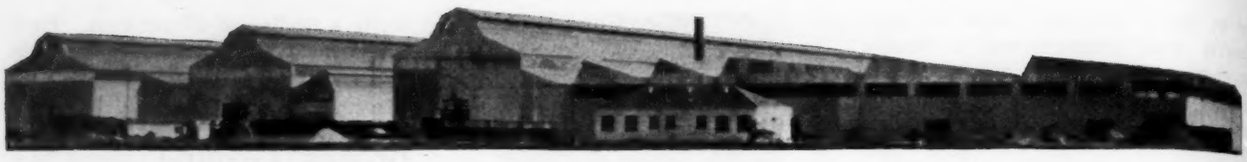


Fig. 154. Coarse grained malleable fitting in section, etched microscopically, with temper carbon nests at g. X 50

Ind. All cranes are to be of heavy mill type and will be furnished by the Morgan Engineering Co., Alliance, O. Continuous heating furnaces will be built by the Costello Engineering Co., Pittsburgh; mills, shearing equipment, lathes, etc., by Hyde Park Foundry & Machine Co., Hyde Park, Pa.; mill motors and all electric equipment by the General Electric Co., Schenectady, N. Y., and the mill drive by the Falk Corp., Milwaukee. The galvanizing equipment, of special design, will be built in the Continental company's shops.

Presents Exchange Paper

The annual exchange paper, one of a series initiated in 1921 on agreement between the British and American Foundrymen's associations and in which the French and Belgium foundry associations later entered, at the 1929 convention of the American Foundrymen's association, at Chicago, April 8-11, will be presented by Frank Hudson, chief metallurgist of Glenfield & Kennedy Ltd., Kilmarnock, Scotland. He has been chosen for this paper by the institute of British foundrymen.



General view of buildings which house the new tin mill plant of the Columbia Steel Corp., Pittsburg, Calif.

Schedules First Tin Mill Plant West of Mississippi River

Eight Hot Mills Arranged to Operate on 3-Part System—Mechanical Doublers Installed—Tin Pots Fed Automatically

By A. J. Hulse and C. E. Dougan

Assistant Engineer and Chief Draftsman, respectively, H. A. Brassert & Co., Chicago

GROUND was broken Sept. 12, 1928 for the new tin mill plant of the Columbia Steel Corp., Pittsburg, Calif. On March 12 the mills were scheduled for the first time. Completion of the plant within six months was achieved through the combined efforts of the corporation's organization who performed the necessary civil engineering and installation of all equipment, and H. A. Brassert & Co., Chicago, who designed the plant.

The tin mill is built adjacent to the existing steel plant and rolling mills of the corporation, and is constructed to permit the product to flow continuously and progressively through the various operations in the most economical manner.

The present installation will have a capacity of approximately 750,000 base boxes of tin plate per annum, with space provided for an extension in the near future to increase this capacity to 1,125,000 base boxes.

Ample Light Provided

The buildings from the bar shearing department to the cold rolling and annealing department are constructed with modified Pond-type roof and sloping monitor lights which provide the maximum amount of light and ventilation possible to obtain and still adhere to mill type of construction. The coating department buildings are of sawtooth type. Ample space is provided in all buildings to afford the best possible working conditions.

The bar shearing equipment is housed in a separate building located adjacent to the sheet and pair furnace leanto. The building is 480 feet long, 81 feet 1 inch wide and 47 feet to the bottom cord of roof truss, and is served by a 10-ton crane.

The bar shear, which is a vertical throat type, is served by an approach table 60 feet long with rollers spaced on 4-foot centers. The shear has a knife

Hot mill department, including eight stands of rolls. Squaring shears are shown at right

30 inches long and will allow for the simultaneous cutting of three bars at the same time. The bars as cut automatically are piled on skids which are lowered by an oil hydraulic piling table. When this table is in its lowest position the bottom of the skid is at floor level. From this position the skid and pile of cut bars are picked up by a gasoline-driven lift truck which conveys them to a dial platform scale where they are weighed and thence to the pair furnace pushers.

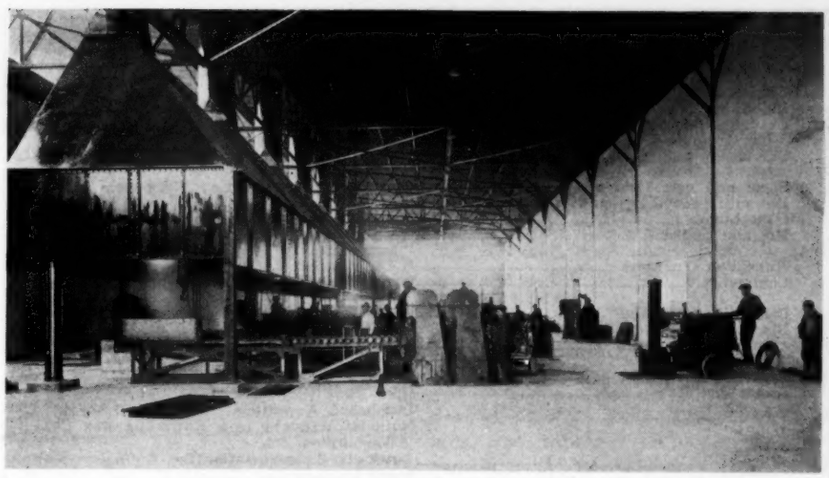
The hot mill department is housed in a main building 600 feet long, 82 feet wide 47 feet to bottom cord of roof truss, and served by a 30-ton crane. The heating furnaces are located in a leanto on the bar shed side of this building, this leanto being 45 feet wide and 30½ feet high to bottom cord of roof truss. Squaring shears are housed in a leanto on the opposite side of the main building, this leanto being 35 feet wide and same height as furnace leanto.

The initial installation of hot mills consists of eight 28 x 34-inch roll stands driven by an 1800 horsepower, 252 revolution per minute motor through a single enclosed herringbone gear reduction set. These mills are arranged to operate on the single mill, three part system. Each mill is served by a continuous pair furnace 48 inches wide and 10 feet long, rear charged front drawn; and, a sheet furnace 10 feet wide and 8 feet deep. Both sheet and pair furnaces are oil-fired by low pressure atomizing burners. Smoke hoods are provided above all furnace doors and are connected to an overhead duct system leading to a fan which exhausts the smoke escaping from the furnace doors to a point outside of the building. The hot mills are located about 28 feet from the front of the sheet furnaces on approximately 30-foot centers.

Furnaces Are Oil-Fired

Each mill is served by a mechanical doubling and shearing unit located between the furnace and the mill train. Each group of four mills and furnaces is served by a common underground man-cooling system consisting of an underground flue and connected to a blower of ample capacity to serve eight outlets at each mill. These outlets are so located and designed that each mill crew has positive control over their own supply of fresh air. Water-cooled floor standings have been provided at necessary locations between the mills and furnaces.

The black pickling equipment is installed in a structural steel connecting building between the opening leanto and the annealing department.



Smoke hoods are provided above all tin pots, which are served by automatic feeders. Cleaning equipment is shown in foreground

This building is 107 feet long x 96 feet wide x 30 feet 6 inches to bottom cord of roof trusses. This department is equipped with one Gray plunger-type pickling machine with an overhead monorail for conveying the crates, and is covered by a hood of timber construction, fumes being exhausted by two 72-inch ventilators.

Housed In Same Building

The annealing and cold rolling equipment is housed in a common building which is 792 feet long, 82 feet wide and 47 feet high to bottom cord of roof trusses and is served by two 30-ton cranes. The annealing furnaces are housed in a 35 foot leanto on the southside of main building. The three black annealing furnaces each are provided with three chambers, each having a capacity of four annealing boxes, and are oil-fired by low pressure oil burners. The annealing furnaces are charged by patented electric floor type charger designed by the Columbia Steel Corp. The unit has capacity of handling four annealing boxes at one time.

The one white annealing furnace is a 3-chamber furnace similar in construction to the black annealing units.

The cold rolling equipment consists of nine stands of 24 x 44-inch mills arranged in three groups, each consisting of three stands in tandem. The cold mills are driven by a 1000-horsepower, 236 revolution per minute motor through an enclosed tandem herringbone gear drive. Collapsible belt conveyors are provided between various stands of cold mills for conveying material.

The white pickler, located beyond the white annealing furnace, is a 22-inch plunger type 4-arm pickling machine, the fumes from which are disposed of in a manner similar to that used at the black pickler.

The tin house assorting room and warehouse are three separate adjoining buildings, each 264 feet long, 80

Rear of sheet and pair furnaces, which are fired by low pressure atomizing burners. Pair furnaces are equipped with automatic pushers

Makers of Principal Equipment

Buildings	McClintic-Marshall Co., Pittsburgh
Cranes, annealing box charger, annealing box bottoms	Columbia Steel Corp., Pittsburg, Calif.
Bar shears and tables, hot mills and shoes	United Engineering & Foundry Co., Pittsburgh
Sheet and pair furnaces	Costello Engineering Co., Pittsburgh
Hot mill gear drive, and white pickling machines	Mesta Machine Co., Pittsburgh
Hot and cold mill motors	Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Annealing furnaces	H. A. Brassert & Co., Chicago
Cold mills	Hyde Park Foundry & Machine Co., Hyde Park, Pa.
Cold mill gear drive	Gears & Forgings Inc., Cleveland
Black pickling and tinning machines and automatic doublers	Aetna Standard Engineering Co., Youngstown, O.
Palm oil equipment	Blaw-Knox Co., Pittsburgh.
Annealing boxes	Blaw-Knox Co., Pittsburgh. Pittsburgh Annealing Box Co., Pittsburgh National Wrought Iron Annealing Box Co., Washington, Pa.
Tractors	Automatic Transportation Co., Buffalo Baker-Raulang Co., Cleveland Elwell Parker Co., Cleveland Clark Tructractor Co., Battle Creek, Mich.

feet wide and 30½ feet high to bottom cord of roof truss. These buildings are of steel construction with tile walls and composition roofing on boards. There has been provided, eight 64-inch 2-way tinning machines with necessary conveyors and cleaners. Each machine is served by automatic feeding equipment. The plates to be tinned are conveyed to the tinning machines from the white pickler in bosh boxes handled by a straddle type lift truck, and from the tinning machines to the assorting room tables by gas electric tiering trucks.

The tinning department is considerably different from the usual construction found in Eastern mills, the tinning machines being located inside of the building under steel hoods. The assorted plate is delivered from the assorting room to the warehouse, or into cars, by tiering trucks.

The use of trucks to handle material from the various departments has been adopted in this plant wherever possible, with the result that all overhead cranes have been eliminated with the exception of cranes in the bar storage, hot mill, and annealing and cold rolling departments. The warehouse building which houses the bran screening, palm oil refining and flux making equipment, and the scruff furnaces and tin vault are located in a convenient place near the tin house.

Explains New Standards

A pamphlet—"Simplified Practice, What It Is and What It Offers"—has been issued by the department of commerce, Washington, to describe the objects of the simplified practice campaign inaugurated by Herbert Hoover when secretary of commerce, and to sum up the results to date. Details of all simplified practice recommendations that have been put into effect are given.

Vertical throat shear for cutting tin bars to desired length

Unusual Features for Foundry Congress

The exhibition in London June 5 to 15 in connection with the international foundry congress will be of wider scope than any previous foundry exhibition in Great Britain.

It will include a large section devoted entirely to imported machine tools and woodworking machinery. This exhibition-within-an-exhibition will be the first practical display of its kind in the country, and as it will be composed of the products of some of the largest machine tool and woodworking machinery firms supplying the British market, it will have a special interest to American visitors.

The activities of the exhibition are bound up with the Foundry Trades' Equipment & Supplies association, the president of which is H. Winterton, managing director of William Cummings & Co. Ltd., Kelvindale Mills, Maryhill, Glasgow, Scotland, the vice presidents being: A. S. Beech, director of the Universal System of Machine Molding & Machinery Co. Ltd., London; D. W. Lennox, managing director of the Britannia Foundry Co. Ltd., Coventry; D. H. Wood, managing director of the Constructional Engineering Co. Ltd., Birmingham.

The material organization of the exhibition is handled by F. W. Bridges & Sons Ltd., London, who will entertain the convention officials from overseas at a luncheon and will also arrange a function for the benefit of delegates generally.

A special feature will be the technical, noncommercial and research exhibit, which is organized with the whole-hearted co-operation of a strong committee and has the support of government departments, universities, institutions, and the laboratories of the largest private firms. The technical committee that supports this technical exhibit is composed of the well-known metallurgists: Prof. John H. Andrew, Royal Technical college, Glasgow; G. C. Castle, Foundry Trades' Equipment & Supplies association; Dr. Cecil H. Desch, University of Sheffield; V. C. Faulkner, past president of the Institute of British Foundrymen and of the Foundry Trades' Equipment & Supplies association; J. E. Fletcher, consultant metallurgist, the British Cast Iron Research association; Prof. D. Hanson, Birmingham university; Dr. Hatfield, chief metallurgist, Brown-Firth Laboratory, Sheffield; Dr. R. S. Hutton, director, British Non-Ferrous Metals Research association; W. B. Lake, Institute of British Foundrymen; Wesley Lambert, chief metal-

lurgist, J. Stone & Co. Ltd., London; Dr. H. Moore, research department, Woolrich; George Mortimer, British Non-Ferrous Metals Research association; J. G. Pearce, director and secretary, British Cast Iron Research association; Dr. Walter Rosenhain, president of the Institute of Metals, national physical laboratory, Teddington; G. Shaw Scott, secretary, Institute of Metals; H. G. Sommerfield, Foundry Trades' Equipment & Supplies association; H. Sutton, Royal Aircraft establishment, South Farnborough; Prof. N. Taverner, University College of Swansea; Prof. F. C. Thompson, The University, Manchester; Prof. Thos. Turner, Institute of Metals; G. H. H. Brown, Admiralty; J. E. Hurst, manager of the centrifugal castings department, Newton, Chambers & Co. Ltd., Sheffield; Dr. V. E. Pullen, radiological research.

Will Discuss Industrial Electric Heating

Through co-operation of the University of Michigan engineering department, the Michigan Manufacturers' association, Detroit Edison and Consumers Power companies, arrangements have been completed for a practical conference, at Ann Arbor, Mich., April 1 and 2, on electric heating in industrial operations. Papers, inspection trips and discussions will be along practical rather than theoretical lines.

Monday evening a dinner will be given at the Michigan Union. Tuesday's session will be devoted largely to papers by engineers in charge of heat treating departments of the Ford Motor Co., Dodge Bros., and other industries. Wednesday will be devoted to an inspection trip through heat treating departments of various Detroit manufacturing institutions and the university.

Crane Co. Earns More

Crane Co., Chicago, recorded increased earning power in the plumbing supply, valve and fitting business in 1928. Net earnings totaled $7,154,198 after deduction of all charges, including deduction of all charges, including depreciation. Federal taxes and interest, equal, after preferred dividends, $2.61 a share on the 2,347,825 shares of common, compared with $6,693,160, or $2.42 a share on 2,348,925 shares in 1927, $9,250,958 or $3.85 a share in 1926, and $8,342,030, or $3.77 a share in 1925. Profit and loss surplus totaled $20,443,277 as compared with $17,832,415 in 1927.

To Expand New Industry

The Standard Steel Propeller Corp., Pittsburgh, manufacturer of aluminum propellers, is being refinanced to permit expansion of capacity two and one-half times. A new Pennsylvania corporation has been formed. It is to have a funded debt of $500,000 of 10-year 6 per cent sinking fund debentures. An issue of 12,000 shares of $7 cumulative convertible preference stock without par value of an authorized issue of 20,000 shares is being offered privately. In addition, 100,000 shares of no par common stock out of an authorized issue of 350,000 shares will be outstanding.

Committees To Convene

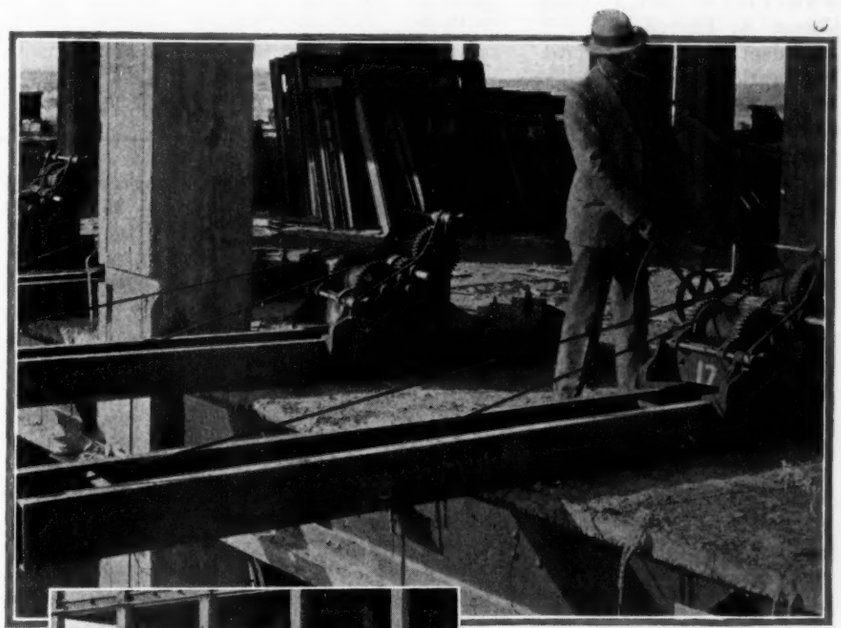
In conjunction with the annual spring group meeting of the American Society for Testing Materials being held at the Stevens hotel, Chicago, March 19-22, several committees of the society also are planning to meet and transact business. Among them are the committees on steel, wrought iron, cast iron, corrosion of iron and steel, magnetic properties, malleable castings and magnetic analysis. The sectional committee on wrought iron and wrought steel pipe and tubing and the sectional committee on zinc coating of iron and steel likewise will hold meetings at this time.

Relief Fund Pays Much

Bethlehem Steel Corp. and subsidiaries paid $919,488.05 in benefits to sick and disabled employes and dependents of deceased employes. Death benefits on 688 deaths totaled $456,715.30 and 7718 cases of sickness and nonindustrial accidents called for $462,772.75 to be paid out in disability benefits.

The Bethlehem relief plan has paid out $2,206,603.56 in benefits since its inauguration June 1, 1926.

New Type of Scaffold Hoist Has Safety Features



A NEW type of scaffold and hoisting device has appeared in the Southwest, where it is being used by some contractors, and approved for ease of operation and safety features. The scaffold is clear of the usual hoisting apparatus. The cables are operated by a series of winches anchored to steel beams which extend from the side of the structure.

Higher Efficiency and Volume
Helps Corporation Net

Annual Report Reveals Improvement in Many Directions in 1928 Business—Output of Finished Steel Was 13,973,129 Tons, Gain of 7.4 Per Cent Over 1927—Large Improvements Planned

IMPROVED volumes of business, higher and more stable operating rates, increased efficiency, and better profit returns in the face of low prices, were the high points in the business of the United States Steel Corporation, as revealed by the annual pamphlet report just made public. The report, signed by J. Pierpont Morgan, chairman, and James A. Farrell, president of the corporation, comments upon the steady influx of new business which has continued since the close of 1928. During last year mills of the corporation operated at an average of 83.4 per cent of capacity. This compared with an average of 78.9 per cent in the preceding year. The uniformity of operations during the year is pointed out by Chairman Morgan and President Farrell. In the March quarter of 1928 operations were at 86.7 per cent; in the June quarter they were 83 per cent; in the September quarter they were 82.2 per cent and in the December quarter they were 81.7 per cent. During the year production of all the corporation's products except cement increased.

Net earnings for the company in 1928 after all charges before dividends amounted to $114,173,774 compared with $87,896,836 in 1927 and $116,667,404 in 1926. The aggregate tonnage of rolled and finished steel products shipped to domestic and export trade in 1928 amounted to 13,973,129 tons compared with 12,992,283 tons one year before, an increase of 7.4 per cent. The total volume of business during the year, covering all shipments including steam and railroad and marine equipment delivered and other business not measured by the ton unit, was $912,575,768 compared with $870,235,942 in 1927. Rolled and finished products for sale in 1928 amounted to 13,972,388 tons compared with 12,979,282 tons in the preceding year, a gain of 7.7 per cent. Discussing the year's business the report says:

"Notwithstanding the improvement in business for the year compared with 1927 as evidenced by tonnage, and the especially marked betterment compared with the second half of 1927, in which period the production average was 71 per cent of capacity, prices secured averaged less than those obtained during 1927. However, they were very close to the prices which prevailed in the closing months of that year. Price levels during 1928 were fairly well maintained but not appreciably above the low point reached in 1927.

"For the entire year of 1928 the average selling price received for the total tonnage of rolled and other finished products shipped compared with the price received in 1927 for equal tonnage of similar products, respectively, netted $1.38 per ton less for domestic and $2.48 per ton less for exports shipped. This too in the face of the fact that in 1928, the country's production of steel exceeded 51,000,000 tons of steel ingots and castings. This was record production for any year. These conditions of high production with diminishing prices reflect the substantial excess of producing capacity in the industry. While the operations of the properties of the corporation showed fair, but not fully commensurate profit return on the investment employed, these results are due largely to the foresight in devoting a liberal portion of surplus and reserve to improving and establishing plants and facilities on a more efficient basis of operation. Thus it was possible to economize in cost of production and in that way counteract substantially the effect upon earnings of the downward trend of selling prices.

Total business transacted by all companies in 1928 as represented by the combined gross sales and earnings equals the sum of $1,374,443,433 compared with a total of $1,310,392,860 in the preceding year. This amount represents the gross value of the commercial transactions conducted by the several subsidiary companies and includes sales made between subsidiary companies and the gross receipts of the transportation companies for services rendered both the subsidiary companies and to the public.

Expenditures made in 1928 for general maintenance and upkeep of the properties amounted to $106,127,490 compared with $117,540,174 in the preceding year. The corporation allowed $56,077,758 for provisional allowances by subsidiary companies.

Total charges for taxes during the

Statistics of Steel Corporation Since Founding

Year	Gross receipts	Net earnings	Balance capital expenditures	Production steel ingots gross tons	Production finished steel for sale, net tons	Shipments finished products, net tons	Number of employes
1928	$1,374,443,432	*$200,986,299	$51,570,108	20,105,749	13,972,388	13,973,129	221,702
1927	1,310,392,861	172,315,489	97,585,998	18,486,444	12,979,282	12,993,283	231,549
1926	1,508,076,090	207,345,153	76,060,520	20,306,668	14,334,412	14,279,929	253,199
1925	1,406,505,195	173,783,424	70,893,944	18,898,697	13,271,010	13,388,846	249,833
1924	1,263,711,468	161,183,467	79,619,986	16,478,857	11,722,908	11,526,890	246,753
1923	1,571,414,483	187,953,667	60,762,920	20,329,950	14,721,469	14,373,822	260,786
1922	1,092,697,772	109,788,916	23,551,991	16,082,385	11,785,331	11,911,904	214,931
1921	986,749,719	100,791,279	70,091,866	10,966,347	7,860,334	7,958,833	191,700
1920	1,755,477,025	185,095,359	102,956,133	19,277,960	14,228,502	14,098,707	267,345
1919	1,448,557,834	152,290,639	87,091,514	17,200,373	11,997,935	12,243,183	252,106
1918	1,744,312,168	208,281,104	129,855,037	19,583,493	13,849,493	14,124,986	268,710
1917	1,683,962,552	304,161,471	117,977,117	20,285,061	14,942,911	15,370,105	268,058
1916	1,231,473,779	333,574,177	64,680,648	20,910,589	15,460,792	15,542,088	252,668
1915	726,683,589	130,396,011	15,537,431	16,376,492	11,762,639	10,982,748	191,126
1914	558,414,933	71,663,615	28,171,013	11,826,476	9,014,512	9,078,559	179,353
1913	796,894,299	137,121,844	41,999,098	16,656,361	12,374,838	12,168,758	228,906
1912	745,505,515	108,174,673	13,780,361	16,901,223	12,506,619	12,696,935	221,025
1911	615,148,839	104,305,466	49,430,851	12,753,370	9,476,248	9,460,169	196,888
1910	703,961,424	101,054,754	53,101,221	14,179,369	10,733,995	10,727,751	218,435
1909	646,382,251	131,491,414	37,916,250	13,355,189	9,859,660	9,691,290	195,500
1908	482,367,840	91,847,710	49,422,697	7,838,713	6,206,832	7,102,456	165,211
1907	757,014,767	160,964,078	66,981,252	13,099,548	10,376,742	10,451,488	210,180
1906	696,756,926	156,624,273	32,155,146	13,511,149	10,578,433	10,862,425	202,457
1905	535,331,736	110,787,653	24,395,408	11,995,239	9,226,386	.....	180,158
1904	444,405,430	73,176,522	17,957,946	8,406,378	6,792,780	.....	147,343
1903	536,572,871	100,171,152	31,042,135	9,167,960	7,635,690	.....	167,709
1902	560,510,479	133,303,763	16,586,531	9,743,918	8,197,232	.....	168,127
1901	.....	84,779,293	.....	8,854,820	.....	.....	.....

*After federal taxes.

year showed an increase. The total was $50,975,751 compared with $46,291,358 in 1927. The sum of $3,485,567 of the increase represented federal income tax while $1,198,826 represented the gain in other taxes.

Expenditures made by the corporation and the subsidiary companies in 1928 for additional property and new plant extensions and improvements equalled the net sum of $51,570,108.

"At the close of 1928 the balance unexpended on authorized appropriations of these subsidiary companies for extensions, additions, and improvements, including the 1929 budget for stripping and development work at mines totaled $73,626,000. It is estimated that about $15,000,000 of this will be expended in 1929. A recent survey of the properties of the manufacturing subsidiaries made with the view of forecasting the probable cost which should be outlaid in the next three years for rehabilitating and modernizing a number of the departments and extending the finished facilities of others, but not contemplating any extension in total steel production, indicates that additional net expenditures will be necessary.

Striking evidence of the increased efficiency of the corporation's plants is found in the fact that in 1928 production of steel ingots totaled 20,105,749 tons compared with 18,486,444 tons, an increase of 8.8 per cent. Notwithstanding this expansion of output the average number of employes in 1928 of 221,702 showed a decrease of 4.25 per cent. The average number of employes, etc., is compared with 1927.

Employes of	1928 Number	1927 Number
Manufacturing properties	160,524	167,405
Coal and coke properties	20,270	21,704
Iron ore properties	11,847	13,261
Transportation properties	23,541	24,149
Miscellaneous properties	5,520	5,030
Total	221,702	231,549
Total wages and salaries	$413,699,720	$430,727,095
	May	March
Largest number of employes in any one month	226,028	251,778
	December	December
Smallest number of employes in any one month	207,815	206,319
Average earnings per employe per day:		
All employes exclusive of general administrative and selling force	$5.85	$5.86
Total employes, including general administrative and selling force	$6.00	$5.99

The balance sheet of the corporation at the close of 1928 shows current net assets of $560,155,190 compared with $533,260,106 one year before. Cash on hand at the close of the year stood at $152,107,633 compared with $112,867,469 one year before. Inventories of $249,764,796 com-

(*Concluded on Page* 789)

Highlights of Steel Corporation Report

PRODUCTION OF

RAW, SEMI-FINISHED AND FINISHED PRODUCTS BY SUBSIDIARY COMPANIES IN THE YEARS 1928 AND 1927

PRODUCTS	1928	1927	1928 Increase	%
ORES MINED	Tons	Tons	Tons	
In the Lake Superior Region (*Iron Ore*)				
Missabe and Vermilion Ranges	20 484 524	19 298 389	1 186 135	6.1
Gogebic, Menominee and Marquette Ranges	2 544 320	2 996 493	452 173*	15.1
In the Southern Region—Alabama (*Iron Ore*)	3 421 443	3 233 580	187 863	5.8
In Brazil, S. A. (*Manganese Ore*)	183 267	118 465	64 802	54.7
Total	26 633 554	25 646 927	986 627	3.8
LIMESTONE QUARRIED (*Includes Dolomite and Fluorspar*)	14 600 181[a]	4 656 150	9 944 031	213.6
COAL MINED				
For use in the manufacture of coke	22 914 225	21 040 383	1 873 842	8.9
For steam, gas and all other purposes	5 776 799	6 389 946	613 147*	9.6
Total	28 691 024	27 430 329	1 260 695	4.6
COKE MANUFACTURED				
In Bee-Hive Ovens	448 378	1 815 910	1 367 532*	75.3
In By-Product Ovens	15 544 995	12 691 070	2 853 925	22.5
Total	15 993 373	14 506 980	1 486 393	10.2
BLAST FURNACE PRODUCTION				
Pig Iron	15 077 527	13 631 498	1 446 029	10.6
Spiegel, Ferromanganese and Ferrosilicon	160 190	152 728	7 462	4.9
Total	15 237 717	13 784 226	1 453 491	10.5
STEEL INGOT PRODUCTION				
Bessemer Ingots	3 989 400	3 706 404	282 996	7.6
Open Hearth Ingots	16 116 349	14 780 040	1 336 309	9.0
Total	20 105 749	18 486 444	1 619 305	8.8
ROLLED AND FINISHED STEEL PRODUCTS FOR SALE				
Steel Rails (Heavy and Light Tee and Girder)	1 366 324	1 482 353	116 029*	7.8
Blooms, Billets, Slabs, Sheet and Tinplate Bars	899 309	758 847	140 462	18.5
Plates	1 481 269	1 423 277	57 992	4.1
Heavy Structural Shapes	1 075 045	920 175	145 870	15.7
Merchant Bars, Hoops, Skelp, Light Shapes, etc.	2 957 518	2 426 363	531 155	21.9
Tubing and Pipe	1 431 434	1 625 994	194 560*	12.0
Wire Rods	228 745	177 770	50 975	28.7
Wire and Wire Products	1 339 623	1 259 907	79 716	6.3
Sheets (Black and Galvanized) and Tinplates	1 945 551	1 645 358	300 193	18.2
Finished Structural Work	578 782	553 988	24 794	4.5
Angle Splice Bars and All Other Rail Joints	250 401	273 916	23 515*	8.6
Spikes, Bolts, Nuts and Rivets	71 765	63 987	7 778	12.2
Axles	39 076	50 379	11 303*	22.4
Steel Car Wheels	60 937	74 898	13 961*	18.6
Sundry Steel and Iron Products	246 609	233 070	13 539	5.8
Total	13 972 388	12 979 282	993 106	7.7
MISCELLANEOUS PRODUCTS				
Zinc	73 518	75 074	1 556*	2.1
Sulphate of Iron	35 269	34 260	1 009	2.9
Fertilizer–Basic Slag	21 186	11 639	9 547	82.0
Fertilizer–Sulphate of Ammonia	243 648	193 434	50 214	26.0
Ammonia (as Liquor)	462	709	247*	34.8
Benzol Products	221 662	169 603	52 059	30.7
	Bbls.	Bbls.	Bbls.	
Universal Portland Cement	14 957 000	15 425 000	468 000*	3.0

(a) Increase in 1928 due largely to inclusion of production of Michigan Limestone & Chemical Company, whose operations were not previously embraced in this consolidated report.
*Decrease.

COMPARATIVE INCOME ACCOUNT

For the Fiscal Years ending December 31, 1928 and 1927

	1928	1927	+Increase —Decrease
EARNINGS—Before charging interest on Bonds and Mortgages of Subsidiary Companies:			
First Quarter	$42 884 055 86	$47 610 344 88	— $4 726 289 02
Second Quarter	48 874 819 24	48 055 635 44	+ 819 183 80
Third Quarter	54 049 214 56	43 355 091 74	+ 10 694 122 82
Fourth Quarter	55 178 209 45	33 294 417 11	+ 21 883 792 34
Total for year	*200 986 299 11	*172 315 489 17	+ 28 670 809 94
Less, Interest on outstanding Bonds and Mortgages of the Subsidiary Companies	7 681 371 88	7 991 113 37	— 309 741 49
Balance of Earnings	193 304 927 23	164 324 375 80	+ 28 980 551 43
Less, Charges and Allowances for Depletion, Depreciation and Amortization applied as follows:			
To Depletion and Depreciation Reserves of Subsidiary Companies	55 621 494 96	47 390 338 57	+ 8 231 156 39
To Sinking Funds on U. S. Steel Corporation Bonds	11 615 808 44	11 515 668 84	+ 100 139 60
Net Income in the year	126 067 623 83	105 418 368 39	+ 20 649 255 44
Deduct:			
Interest on U. S. Steel Corporation Bonds outstanding	16 106 572 90	16 674 175 68	— 567 602 78
Premium Paid on Bonds redeemed:			
On Subsidiary Companies Bonds	405 893 83	320 215 05	+ 85 678 78
On U. S. Steel Corporation Bonds	1 552 170 36	1 078 000 02	+ 474 170 34
Balance	108 002 986 74	87 345 977 64	+ 20 657 009 10
Add: Special income receipts for the year, including adjustments of various accounts	6 170 788 00	550 858 39	+ 5 619 929 61
	114 173 774 74	87 896 836 03	+ 26 276 938 71
Dividends on U. S. Steel Corporation Stocks:			
Preferred, 7%	25 219 677 00	25 219 677 00	.....
Common, 7%	49 813 645 00	49 813 645 00	.....
Surplus Net Income	$39 140 452 74	$12 863 514 03	+ 26 276 938 71

*Balance of Earnings after making allowances for estimated amount of Federal income taxes.

Machine Torch Facilitates Cutting Boiler Handholes and Cover Plates

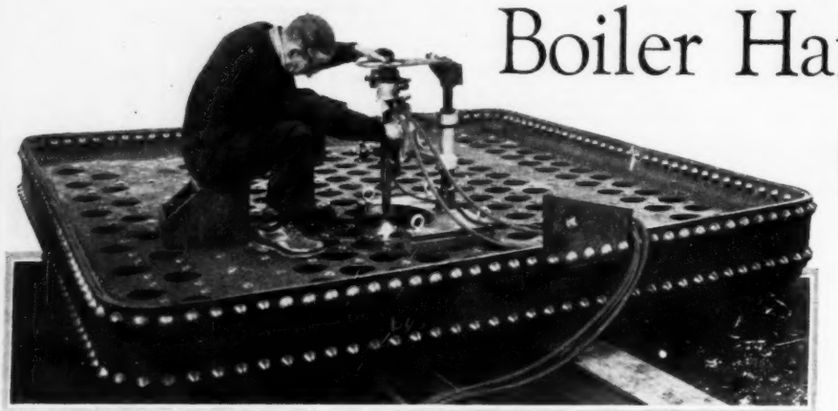


Fig. 1—This shows the normal position of an automatic machine torch while cutting handholes in a boiler sheet

WATER-TUBE boilers of the box-header type are so constructed that the tubes can be inspected and cleaned by removing handhole covers opposite the ends of the tubes. The handholes further provide access for removal and replacement of tubes. The plates on the tube side of the single-box type are the tube sheets while those opposite are the handhole sheets. The space between is filled with water, and the sheets are supported by staybolts around each tube to resist the boiler pressure.

Although handhole covers generally are made elliptical so that they may be inserted through the holes in the header sheet, turned one-quarter way around and bolted up against the gasket on the inside face, pear-shaped holes and plates also are employed and are coming more and more into use. Both shapes make up against the pressure side of the sheet, but the latter form lends itself to close spacing and staybolt support somewhat better than the elliptical form. Neither form of hole and plate is machined easily. Special tools and fixtures are required to cut the holes and plates, and the machining operation, therefore, is slow and expensive.

Several well-known boiler builders are using the Airco-Davis-Bournonville type camograph or automatic machine to cut the holes and plates with the oxyacetylene torch. The equipment is manufactured by the Air Reduction Sales Co., New York. The accompanying illustrations show the No. 4 machine in the plant of the Bigelow Co., New Haven, Conn., one of the oldest boilermakers in the United States.

Holes Cut Before Assembling

Fig. 1 shows a header about 10 feet square, and the spacing of the pear-shape handholes. The machine is set in position for cutting holes, but the holes actually were cut before the header was assembled and riveted to the girth plates. However, the setup illustrates the relation of the machine to the plate while cutting. When the holes actually were cut, the staybolt holes had been drilled. These holes were utilized to locate the cutting machine, locating studs having been inserted in the base which engaged the staybolt holes around each handhole.

It might be explained that the oxyacetylene torch follows a path determined by the shape of an internal cam fastened to the top of the vertical post. A magnetized roller driven through reducing gears by a small electric motor contacts with the inner surface, and as it slowly turns it follows the cam and the torch beneath mounted on the hinged arms describes the path of the cam and cuts the shape in the material beneath.

The handhole plates in this case are made from rectangular pieces 5¾ x 7 inches, ⅜-inch thick. The "dome" shape is produced between dies in a 400-ton hydraulic press in two operations. The first operation accomplishes the approximate dome shape, while the second completes the shape and impresses a flat surface and sharp corner next to the dome. This flat surface makes up against the gasket when in the boiler. A hole is punched in the center of the plate for the dog-bolt. The rectangular formed and punched plates are then cut on the automatic cutting machine, as shown in Fig. 5. The plates are chucked on a cast-iron form with a threaded stud in the center over which

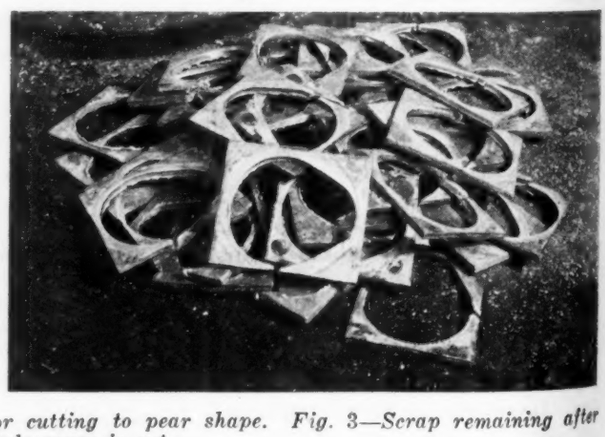


Fig. 2—Pressed-steel handhole covers ⅜-inch thick ready for cutting to pear shape. Fig. 3—Scrap remaining after pear-shaped handhole cover is cut

the punched hole is placed when assembling the plate on the support. The threaded stud and a nut and washer are the means for positioning and holding the plates during the cutting operation.

A stack of the formed plates before cutting appears in Fig. 2, and three plates after cutting are on the machine at the right in Fig. 5. A pile of typical scrap produced in cutting the plates is seen in Fig. 3.

The cut plates next are passed on to a hydraulic press where the threaded dog-bolts, heated to riveting temperature are inserted and headed over in the inside, making the handhole covers complete as shown in Fig. 4. The shank of the dog-bolt is held in a split die which prevents deformation of the threads during the operation.

Some idea of the cost of cutting with the machine torch is given in the fact that the plates are cut in about 80 seconds each, using a No. 1, style 23 tip. The holes in the handhole sheets are cut somewhat slower, the sheet being about ⅝-inch thick. The only finishing after cutting is that necessary to remove the oxide scale from the cut surfaces.

Fig. 4—Handhole covers with dog-bolts riveted in and finished ready for assembly in the header

Efficiency Helps Net of Steel Corp.

(*Continued from Page* 787)

pared with $271,168,001 one year before.

With reference to other phases of the corporation's activities the report says:

"Pensions were paid during the year by the trustees of the United States Steel and Carnegie pension fund to retired employes in the amount of $3,488,488, compared with $3,003,209 in the preceding year. Pensions were granted during 1928 to 1195 retiring employes, and at the close of the year there were 7000 names on the pension rolls, a net increase of 612 during the year. The average age of the 1195 employes retired in 1928 was 63.86 years, their average length of service 34.10 years, and the average monthly pension $53.55. Since the inauguration of the pension plan in 1911 an aggregate of $22,325,423 has been paid in pensions.

"The usual annual offer for 1928 to employes to subscribe for common stock of United States Steel Corp. was made in April, 1928. The privilege of subscription was extended on basis of the price of $145 per share, all other conditions and terms being substantially the same as those of similar offers in previous years. Subscriptions were received from 49,612 employes for a total of 94,077 shares. At Dec. 31, 1928, there were 49,201 employes who were registered stockholders, holding an aggregate of 132,037 shares of preferred stock, and 661,005 shares of common stock. There were also 19,849 additional employes who had in force open subscription accounts covering purchase of stock, but were not yet registered holders of shares.

"In accordance with the profit sharing plan adopted by the stockholders in 1921, appropriation was made from the earnings of 1928 of a fund for distribution under such plan.

"At the close of 1928 the subsidiary companies had invested a principal amount of $14,649,145 in sales contracts and mortgages bearing interest and payable in installments over a period of years, made largely in assisting employes in acquiring ownership of their own homes. The net decrease during the year in advances for these was $1,154,566.

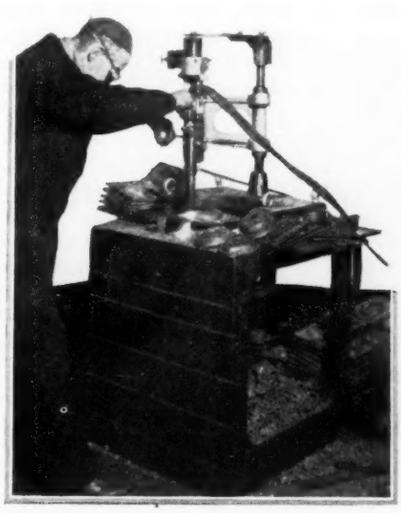


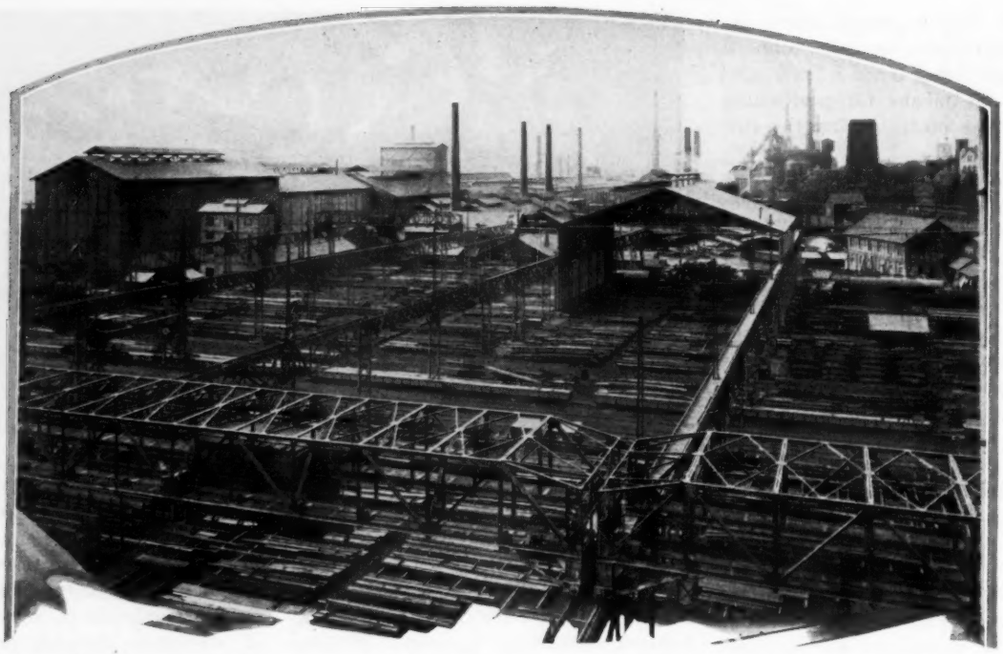
Fig. 5—Cutting handhole covers to shape. The cutting speed is 12 inches per minute

"The subsidiary companies of the corporation have fostered the taking out of group life insurance by assisting employes to secure this form of protection through the medium of their employe welfare associations. The insurance contracts are negotiated and written entirely by the respective groups of employes and the insurance companies, the employes paying the premiums and the subsidiary companies functioning only in collecting the premiums by deductions from salaries and wages as authorized by employes. At close of 1928 employes to the number of 160,334 had taken out insurance under these plans for a total amount of insurance of $211,464,000.

"The amount expended by the subsidiary companies during the year for sanitary work at the plants, mines and other operations was $3,052,925, as compared with an expenditure of $3,227,242 in 1927.

"The accident prevention activities inaugurated in 1906 and referred to in previous reports were intensively continued in 1928. During the year $1,077,346 was expended to provide necessary safety devices and appliances and to educate employes in safe working methods, as compared with a similar cost of $1,271,258 in 1927. Since 1906 and up to the end of 1928 serious and fatal accidents per 100 employes have been reduced 64.31 per cent; and since 1912 disabling accidents of all kinds per 100 employes have been reduced 88.19 per cent.

"The subsidiary companies disbursed during the year 1928 for work accidents, including liabilities accrued under state compensation laws, the actual payment of which is spread over a period of years, a total of $4,276,970, compared with an outlay of $4,534,156 in 1927. Of the total disbursed during the year, 86.10 per cent was payable directly to the injured employes or their families."



Assembling yard of the structural steel department of the Arbed Works in the Saar district

Three Nationalities Share in Saar Steelworks Organization

German, French and Luxemburg Capital Interlocked in Operating Furnaces and Mills

By Vincent Delport

European Manager, Iron Trade Review

THE Saar ranks seventh in Europe among the steel producing nations, coming immediately after Luxemburg. Its output of raw steel in 1928 exceeded 2,000,000 tons. The iron ore necessary to the Saar iron and steel works is imported. By far the largest tonnage comes from France, and it is mainly composed of Lorraine minette, a phosphorus ore containing 32 to 39 per cent iron. In 1927, of 4,774,879 tons of ore coming into the Saar, 4,251,599 tons were from France and included 4,130,017 tons of minette; 354,159 tons came from Luxemburg, 127,519 tons from Germany, and the remainder from other sources. The Burbach plant, controlled by the Acieries Reunies de Burbach-Dudelange, known as Arbed, receives its ore from the mines belonging to the company in Luxemburg.

Owing to the composition of the

Keeping in Touch with European Market Conditions

FEW writers for American readers have a more comprehensive knowledge of the European iron and steel industrial organization than Mr. Delport. This is the second and concluding installment of his article on the Saar district, the first having appeared in the March 14 issue of IRON TRADE REVIEW.

The Saar is an important industrial district. It should not be considered as a serious direct competitor in world iron and steel markets, as the iron and steel output goes mainly to Germany and France. But in so doing it forces out a certain tonnage of German and French steel, and thus indirectly exerts an outside influence.

It will be remembered the first part of the article dealt with raw materials. The coal mines of the Saar are entirely under French government control, while the iron and steel works are controlled by German, French and Luxemburg capital. In this installment Mr. Delport gives the details of the "setup" of the various companies, which combined employ about 36,000 workmen.

In the March 7 issue of IRON TRADE REVIEW, *Mr. Delport gave a complete outline of the various ententes and syndicates controlling European iron and steel markets. All of these articles are part of a series helping the American iron and steel manufacturers, and consumers, understand the European situation.*

ore, practically all pig iron produced in the Saar is basic. There are 31 blast furnace stacks, of which 26 were in operation at the end of 1928, giving an average output per unit of 225 tons in 24 hours. The total output of pig iron in 1928 was around 2,000,000 tons.

The Saar now produces 40 per cent more pig iron than in 1913, whereas the output of steel exceeds only slightly the prewar year. This is due to the fact that before Lorraine was restored to France certain Saar steelworks now under German control received important tonnages of pig iron from the Carlshutte works of Thionville, from Uckange and from Rodange now in French hands. Although relations continue between these works the Saar concerns have increased their capacity to become independent of French supplies. In 1913, 473,230 tons of pig iron came from Alsace Lorraine, but in 1926 the receipts dropped to 67,451 tons. The modern furnaces recently constructed at Volklingen and Brebach are of 400 tons capacity. Further expansion is underway.

Steel capacity also is increasing. The output of 1928 just about equalled the 1913 figure, for the first time since the war. About 75 per cent of the output is basic bessemer steel, the remainder being mainly basic open-hearth steel, with a small percentage of electric steel. Less than 1 per cent of the output of raw steel is represented by steel castings; the rest is steel ingots.

Plants Under German Control

The Saar is a member of the European steel entente and was originally allotted a quota of 5.2 per cent of the aggregate output fixed for Germany, France, Belgium, Luxemburg and its own steel plants. The Saar steel plants, however, are controlled by Germans and their output is partly regulated by the German Rohstahlgemeinshaft, or raw steel union. As a result, the quota of the Saar in the European entente has been modified following an understanding with Germany; the German and Saar tonnages are added and the Saar works are allowed to produce 12.65 per cent of the total, giving them 1,800,000 tons, of the present combined quota of 29,287,000 tons allowed to the five original member-countries.

The steel ingots produced in the Saar are transformed into semifinished and finished products in the finishing works of the providence. The district itself consumes less than 300,000 tons of iron and steel, outside the producing works. The remainder has to be marketed beyond the Saar borders, and in this respect the situation of the province presents difficulties which have been brought about by the territorial changes that followed the treaty of Versailles. Until then the Saar works had a natural outlet in Alsace Lorraine and more especially in southern Germany. When Alsace Lorraine returned to France, the Ruhr works increased their capacity, and France and Germany tended to keep to themselves the respective markets of Alsace Lorraine and southern Germany.

Dating from Jan. 10, 1925, and in accordance with the provisions of the treaty of Versailles, Germany became free to impose a tariff on imported goods, and at the same time the Saar territory was included in the French customs union. Following a series of negotiations an agreement was arrived at between France, Germany, Luxemburg and the Saar respecting the exchange of iron and steel products between these markets.

According to the present arrangement, France agrees to take 500,000 tons of Saar products annually, and Germany will accept, duty-free, a maximum of 1,310,000 tons, which must be sold through the agency of the various German syndicates. This tonnage goes to southern Germany, but is subject to competition from the French works, which also can sell a certain tonnage in that market at a preferential tariff. During the past three years shipments of Saar products to Germany and France remained below the maximum, and a substantial tonnage was sold to other countries. Sheets are exported to Great Britain and occasionally steel tubes are exported to the United States. Apart from certain specialties, however, the Saar is somewhat at a disadvantage compared with Lorraine when exporting to overseas markets, owing to the easier access of the French works to the channel ports.

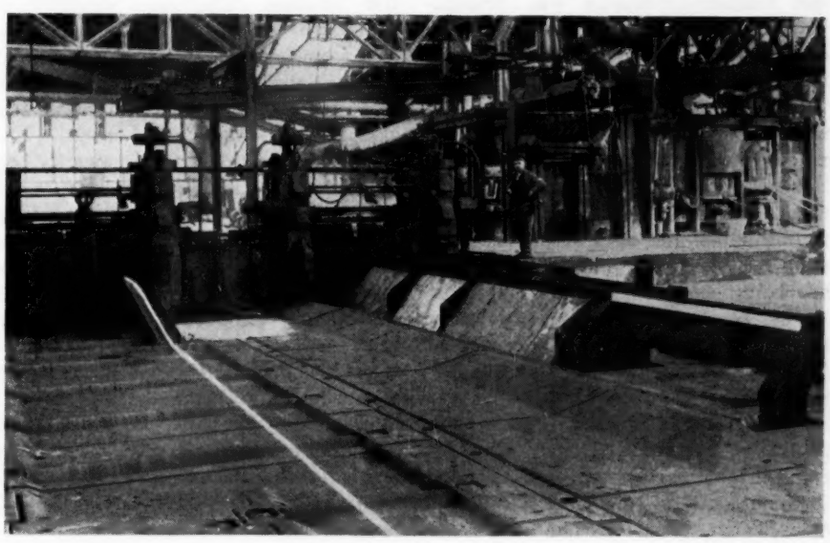
There are six iron and steel producing companies in the Saar. The Rochling is the only one which is completely controlled by German capital. Its works are at Volklingen, a few miles from Sarrebruck. It operates seven blast furnace stacks, including a modern unit recently built. The steel plant contains basic bessemer converters, basic open-hearth

Iron and Steel Shipments by Saar Producers

(Metric tons)

	1926	1927	1928
PIG IRON:			
To Saar district	16,680	22,019	37,466
France	9,931	15,123	7,879
Germany	73,606	71,372	81,601
Other countries	76,183	34,949	34,216
Total	176,400	143,463	161,162
STEEL:			
To Saar district	221,424	196,600	166,884
France	387,213	211,868	326,531
Germany	590,854	908,663	601,865
Other countries	416,319	306,895	357,250
Total	1,615,810	1,624,026	1,452,530

Figures for 1928 include first nine months only.



Merchant mill at one of the larger rolling mills in the Saar open-hearth plant

furnaces and two electric furnaces. The company has added considerably to its coke oven plant, and is planning to increase its iron and steel producing capacity by erecting a new plant. It manufactures many descriptions of rolled products, except sheets, and specializes in fine steel for automobiles, and stainless steel. The company employs about 7700 workmen.

The Burbach iron and steel works are controlled entirely by the Luxemburg group, Arbed. The first blast furnace stack was erected at Burbach in 1856. At that time the Belgian iron and steel makers were selling their products in Germany and the Germans put a tariff on imported iron and steel. A group of Belgian and Luxemburg producers decided to operate a plant in the territory of the German Zollverein, and they developed the Burbach plant. In 1911, through the initiative of the late M. Mayrisch, the Burbach company was amalgamated with Luxemburg and Lorraine companies, forming the Acieries Reunies de Burbach, Eich, Dudelange. The Burbach furnaces consume Lorraine ore and Saar coal, which is made into coke at the works. The Burbach works consist of a coke oven plant, blast furnaces, a steelworks, rolling mills, an electric power plant and a by-product plant. The works are being modernized.

The blast furnace plant contains eight stacks capable of producing 600,000 metric tons annually. The steel plant comprises three 200-ton mixers and one 1100-ton mixer, five 25-ton converters and four furnaces for the melting of spiegeleisen and ferromanganese, and three 25-ton open-hearth furnaces. The annual capacity is 550,000 tons. The rolling mills comprise two blooming mills and 11 mills of various capacities. An additional 850-millimeter train is being completed.

Arbed produces structural steel, rails, wire rods, wire products, plates and sheets. The company also operates a sheet rolling mill at Hostenbach, with an annual capacity of 60,000 tons. The total number of workmen in both plants is 8300. Another Luxemburg concern, Hadir, operates rolling mills at Saint-Ingbert, where it specializes in hoops, bands and wire products.

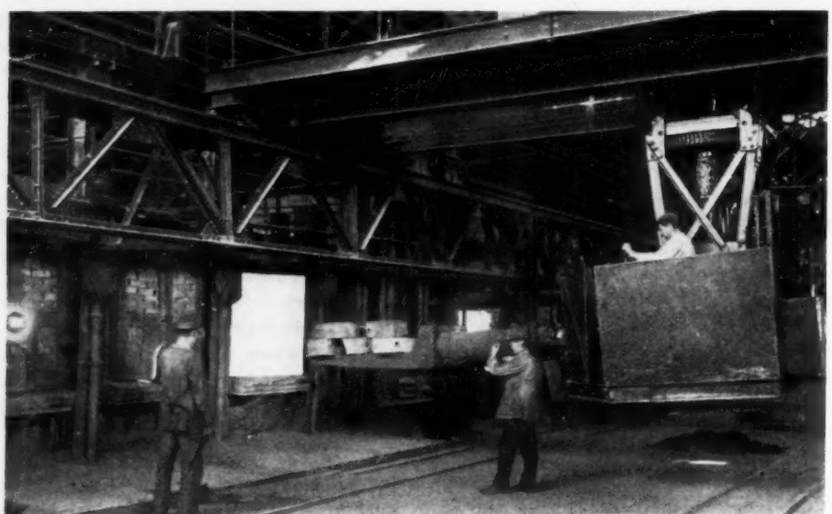
The Hauts Fourneaux et Acieries de Dillingen are controlled by the French Marine et Homecourt group, which owns 60 per cent of the stock, and by German capital, to the extent of 40 per cent. The works comprise four blast furnace stacks capable of producing about 150,000 tons annually, four basic converters, seven open-hearth furnaces, and one electric furnace. The steel capacity is about 260,000 tons a year. They produce semifinished steel which is sold to the Saint-Ingbert works, merchant bars, plates and sheets, tin plate and skelp. They employ 7500 men.

The Neuenkircher Eisenwerk are controlled by the German Otto Wolff group, but 20 per cent of the stock is owned by the French Acieries du Nord et de l'Est. They have six blast furnace stacks with an annual capacity of about 210,000 tons, four basic converters, three open-hearth furnaces, and one electric furnace, the steel capacity being about 185,000 tons. The company is building a new foundry and 50 coke ovens. It makes rails, beams, merchant bars, wire and skelp. It employs 6400 men.

The Acieries et Usines a Tubes de la Sarre, controlled by French capital, manufacture tubes by the Mannesmann process, also water and gas pipes. They own a steelworks at Burbach, but the tube plant is at Bous. The production in 1927 was 70,000 tons of steel and 40,000 tons of pipe. All the works mentioned are members of the German raw steel union.

The Halbergerhutte is an important manufacturer of cast iron pipe. Sixty per cent of its stock is owned by Pont-a-Mousson in France, and 40 per cent by the German Sturma group. The plant is at Brebach, where five blast furnaces produce about 200,000 tons annually. A sixth furnace is under construction. Pipes are cast vertically. The company also manufactures radiators. It employs 4100 workmen.

There are other metallurgical concerns in the Saar, of which the more noteworthy are: The Homburg tube works, controlled by Neuenkirchen, and which manufacture tubes under the Mannesmann process; the Ateliers de Construction de Dillingen, controlled mainly by Luxemburg capital, which specialize in structural steelwork, boilers and reservoirs; Ehrardt and Schmer, mainly German, makers of heavy machinery; the Acieries Sarroises, French controlled, specializing in steel castings, the 1927 output being 10,000 tons; George Heckel, cable manufacturer, and Ernst Heckel, maker of conveying equipment, both German.

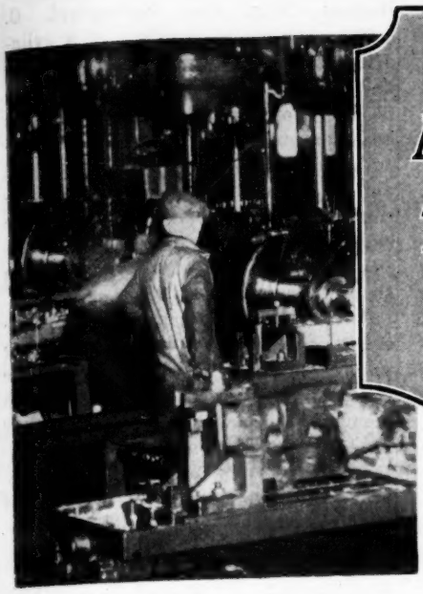


Open-hearth plant at the Burbach Steelworks

Plans Research Building

A new building for industrial research will be erected at once by the National Research Laboratories on a site in Ottawa, Canada, overlooking the Ottawa river. The structure will be 414 feet long and 174 feet wide, with a basement and three stories. The lecture hall will be above the main entrance. Laboratory accommodation will be supplied by the new building for work similar to that carried on by the bureau of standards, Washington, and provision is being made for the study of methods to improve the processes of manufacture, and for the solution of special problems arising from the development of resources in Canada.

About 1800, when the world's production of pig iron was 540,000 tons, Sweden made 30 per cent, Russia 20 per cent and Great Britain about 35 per cent. The outstanding iron ore field of Europe is that containing the Jurassic oolite of Luxemburg and Lorraine.



New Machine Tools and Shop Equipment

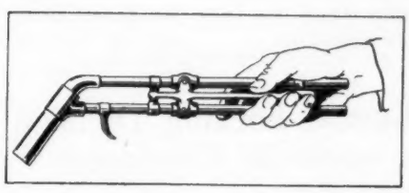
"Without tools man is nothing, with tools he is all."—Carlyle

Feed Pusher Is Designed for Screw Machines

No. 65

Eastern Machine Screw Corp., New Haven, Conn., has placed on the market a new type of feed pusher for multiple spindle automatic screw machines. The pusher is composed of two principal parts, the master, which fits on the end of the customary feed tube, and the inner pusher which is installed inside of the master.

A taper on the inside of the master corresponding with the taper on the inner pusher causes the pusher to grip the stock firmly when the feed tube is moved forward in operation.



No. 66—Automatic welding torch which operates on city gas

When the feed tube is drawn backward the inner pusher is in the released position and slides freely over the stock.

After the machine is once equipped with a set of masters it is only necessary to change the inner pusher when changing from one size stock to another, the master remaining as a permanent part of the machine. Feed uniformity and elimination of rebound permit handling stock at high speed.

Automatic Welding Torch Uses City Gas

No. 66

St. Paul Welding & Mfg. Co., St. Paul, is introducing an automatic torch using city gas and compressed air, and embodying a new idea in blowpipe construction. Two valves, one for the city gas and the other for the compressed air, are provided. Both are operated simultaneously by a hand lever.

The city gas valve is so constructed that once the torch is lighted a small pilot continues to burn when the lever control is released. With this ar-

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Cutting machine	Oxyacetylene unit for curved and straight cutting	Air Reduction Sales Co.	36	Feb. 21	528
Grinder	Ball bearings; fine and coarse wheels	United States Electrical Tool Co.	37	Feb. 21	529
Compensator	Exposed sparking eliminated by new contact method	General Electric Co.	38	Feb. 21	529
Buffer	Performs polishing and buffing operations	Hill-Curtis Co.	39	Feb. 21	529
Relays	New line of temperature overload relays	General Electric Co.	40	Feb. 21	529
Indicator	Detects presence of combustible vapors in air	Union Carbide Sales Co.	41	Feb. 21	529
Floor armor	Steel mat for reinforcing concrete and asphalt floors	Blaw-Knox Co.	42	Feb. 28	591
Welding rod	High-strength welding rod for bronze welding operations	Oxweld Acetylene Co.	43	Feb. 28	591
Grinder	Heavy-duty type; duplex tables may be uncoupled	Cincinnati Grinders Inc.	44	Feb. 28	592
Compressors	Eleven models ranging from ¼ to 5 horsepower	Curtis Pneumatic Machinery Co.	45	Feb. 28	593
Electrode holder	Water-cooled; for use in manual carbon arc welding	Lincoln Electric Co.	46	Feb. 28	593
Grinder	Equipped with attachment for grinding large cams	Norton Co.	47	Feb. 28	593
Screwnail	For fastening sheet metal and wood; driven in	Parker-Kalon Corp.	48	March 7	651
Crank grinder	Work need not be removed to grind crankshaft pins	Landis Tool Co.	49	March 7	651
Generating set	Diesel engine connected to 40-kilowatt generator	Buda Co.	50	March 7	651
Drill	For drilling, burring or countersinking; dial plate feed	Kent Machine Co.	51	March 7	652
Acetylene generator	Used with low or medium pressure welding blowpipe	Oxweld Acetylene Co.	52	March 7	652
Clutch	Automatic and mechanical accelerating type	Worcester Polytechnic institute	53	March 7	652
Magnetic probe	To remove steel particles from flesh or eyes	V. Mueller & Co.	54	March 7	652
Grinding machine	Universal type with reversible wheel stand motor	Brown & Sharpe Mfg. Co.	55	March 7	653
Grinder	Swing frame type for foundry snagging work	Kinney Iron Works	56	March 7	653
Pouring device	Hand operated; ball bearing equipped	Modern Pouring Device Co.	57	March 7	653
Grinders	Small high-speed units; bench or floor types	Kling Bros. Engineering Works	58	March 14	719
Crane	Improved lubrication; numerous safety features	Whiting Corp.	59	March 14	719
Tractor crane	Increased flexibility and greater capacity	Otis Engine Corp.	60	March 14	720
Nut tightener	Auxiliary clutch said to prevent ratcheting and jerking	Independent Pneumatic Tool Co.	61	March 14	720
Hoist	Mounted on 5-ton truck; gasoline motor drive	American Hoist & Derrick Co.	62	March 14	720
Gear cutter	Hypoid head handles gears 60 inches in pitch diameter	Gleason Works	63	March 14	720
Milling machine	Provided with combination power and manual feeds	Kent-Owens Machine Co.	64	March 14	721
Feed pusher	For high speed handling of stock to screw machines	Eastern Machine Screw Corp.	65	March 21	793
Welding torch	Simultaneous operation of valves admitting gas and air	St. Paul Welding & Mfg. Co.	66	March 21	793
Air heater	For recovery of waste heat in stack gases to preheat air	Shaw-Perkins Co.	67	March 21	794

rangement the torch is placed into operation with hand pressure on the lever which opens both the city gas and compressed air valves. Releasing the lever closes the air valve and reduces the flow of gas to just enough for the pilot light. Soldering, melting, heating and brazing of metal parts are some of the uses to which the torch may be applied.

New Air Heaters Recover Heat in Stack Gases

ITE No. 67

Shaw-Perkins Co., Oliver building, Pittsburgh, is marketing an oval tube air heater for recovery of waste heat from boiler stack gases and preheating combustion air. Stream-line oval tubes are used in the construction and the headers of the heating elements are wedged to their guide rails by bolted clamps to make an air-tight metal-to-metal joint.

The assembled headers float in the main frame to allow for tube expansion, while the shape of the element headers is dished to absorb local strains. The air heater permits steam from soot blower jets to expand freely in all directions and to carry forward an increasing quantity of soot without any tendency to plug the unit.

It is built so that any heating element can be conveniently installed or removed through either of the two sides of the heater which do not connect with air or gas passages. Neither air ducts nor gas passages need be disturbed.

Industrial Employment Outlook Good

Industrial or plant and factory employment was well maintained in February, according to the United States employment service. The upward trend in the iron and steel industry reported in January continued in February, the service states. Operations increased in many instances, additional labor was engaged, and the outlook is bright, as large orders have been received for all classes of iron and steel products.

Metal working establishments, the service says, continued capacity schedules in most instances and a shortage of skilled machinists existed in several cities. The service reports the employment outlook for the ensuing thirty days is bright. A large volume of building will be under way with the advent of spring, and by the latter part of the month the majority of the seasonal unemployment building trades men should be employed.

The bureau of labor statistics reports that employment increased 1.9 per cent in February, compared with January and payroll totals increased 6.9 per cent.

To Try Steel Reinforcing for Asphalt

A test of steel reinforcing for asphalt paving is to be made shortly in the downtown section of Chicago. This construction will permit the application of two inches of asphalt in steel reinforcing mesh, thus adding to the resistance power of the pavement to the wear of motor traffic. It is believed that the grip of motor bus wheels on the pavement will be taken up by the steel mesh. If the experiment is satisfactory, it is the plan to have alleys in the Chicago loop district similarly treated, particularly where the alley pavements cross the sidewalks.

Equips Forging Division with Oil Eliminator

A special type horizontal oil eliminator recently was installed in the drop forging department of the Transue & Williams Steel Forging Corp., Alliance, O., to remove oil and particles of packing and other solids. The eliminator handles steam exhausted from the hammers at the rate of 90,000 pounds an hour and at a pressure of 5 pounds. The condensate is used as boiler feed water. The eliminator was manufactured by the Hoppes Mfg. Co., Springfield, O.

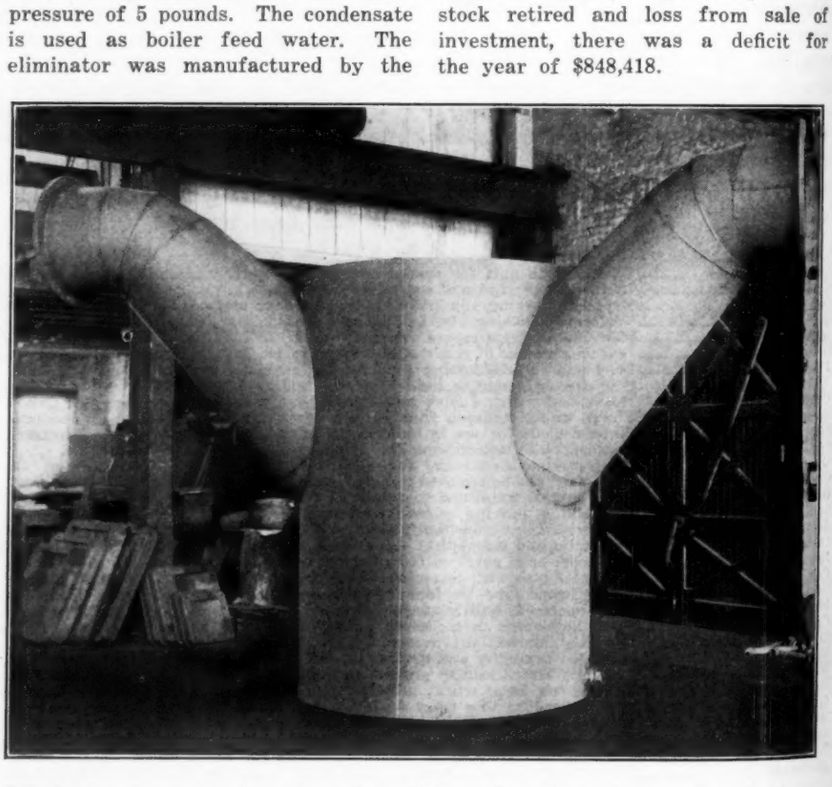
This equipment consists of a cylindrical tank 5 feet, 8 inches diameter and 8 feet, 9 inches high. The shell is built of ⅜-inch plates and the heads are 5/16-inch plate. The peculiar design of the curved inlet and outlet connections was required because of the necessity of placing the body of the eliminator to one side to clear existing obstructions in the forge shop when installed.

The horizontal oil eliminator is literally one piece of steel as all the seams were welded by the electric arc process which fuses the metal of each member into each other. A stable-arc welder of 300-ampere capacity, manufactured by the Lincoln Electric Co., Cleveland, was used to supply the welding current.

Foundries' Bookings Up

Although dwindling railroad equipment orders in 1928 caused a decrease in the earnings of the American Steel Foundries, Chicago, last year, the tonnage of unfilled orders at the end of the year was almost double that of a year ago and the annual report, just made public says "there is still considerable business in sight."

Net income, after all charges, taxes, etc., was $3,256,072, equal, after preferred dividends, to $3 a share on the common stock, against $4,076,094, or $3.48 a common share earned in 1927. After dividends on the preferred and common stocks premium on preferred stock retired and loss from sale of investment, there was a deficit for the year of $848,418.



Eliminator for removing oil and particles of packing from exhaust steam

Editorials

Special Steels Have Wide Field

A TENDENCY is manifesting itself which seems to point to reduction in the use of ordinary soft steel and increase in alloy steels and alloys of other metals. Strength is the desideratum and lessened weight is a goal. Automotive builders have lightened their cars by use of alloy steels, giving strength at less weight, and have increased strength without adding to weight.

Recent developments give color to the idea that special steels eventually may play a more important part in industry. A railroad has placed an order for freight cars, specifying a special metal of non-corrosive analysis, using lighter plates, thus reducing the tonnage to be bought and also giving a car costing less in power to transport.

An aluminum company has ordered a large overhead electric crane of aluminum alloy, with a steel crane of the same dimensions, the two to be used in similar work and data of costs will be kept.

In a large bridge to be built at San Francisco three-fourths of the steel tonnage is of special analysis to give strength at less weight, the remaining steel being of the ordinary carbon analysis.

Aviation and automotive progress have given impetus to development of lighter metals, and heat treatment and alloying have been able to keep up with demands in these lines. Reduction of weight of automotive trucks and railroad cars will effect a vast saving in material and in power necessary for their movement. The ordinary truck and freight car now weighs almost as much, if not more, than the load it transports. To reduce this dead load will save much power and result in economies well worth while.

Small Industrial Units Predominate

IN SPITE of mergers and growth of tremendous industrial establishments, the small shop remains the backbone of American industry. Shops employing less than 250 employes form 96.5 per cent of American industrial establishments. But the remaining 3.5 per cent employ 53.3 per cent of all employes.

These figures are a by-product of a recent survey by the National Industrial Conference board in which it was sought to study the prevalence of industrial relations programs in the smaller units.

The fact that practically half the workers of the nation are employed by concerns classed as small, the arbitrary dividing line being 250 employes, is rather a surprise as the natural supposition is that the great industries would include in their ranks by far the larger portion of workers. Especially would this be deemed the case after the era of consolidations that is reducing the number of companies and increasing the average number of employes per unit.

Aside from the interesting facts relative to welfare and industrial relations uncovered by this survey, the surprising proportion of workers in small shops is a matter of importance to all who seek to obtain the ear of their employers for any purpose.

The small unit still is paramount and has not been crushed out by competition of the larger. Who seeks for any purpose to convey a message to industry must consider the 96.5 per cent of establishments in this class as of more importance than the 3.5 per cent in the larger units.

Join Forces for Research

IT IS significant of the broader co-operative trends in industry that various industrial groups are combining in research work to a greater extent than ever before. Several organizations have joined forces when it appeared that their research problems were common ones.

The recent federation of the American Refractories institute and the refractories division of the American Ceramic Society for research exploration in like channels is illustrative. Interest in scientific research is broadening in every industrial group. This has become evident at convention gatherings and groups meetings. It bespeaks the development of powerful forces in intelligent and co-operative work in production and marketing.

Supply-Demand Inexorable in Scrap

RISING iron and steel scrap prices in the latter months of 1928 and early in 1929 were rather generally accepted as a harbinger of an improved iron and steel market, and the event appears to have fulfilled the forecast. Now that scrap prices are giving ground, the domi-

nant, unquenchable preference for good news is inclined to discount the recession that is indicated, though such a development in the next 30 to 60 days seems inevitable.

Regardless of scrap's value as a prognosticator of the major markets, the trend of prices in recent months gives further proof that scrap is inexorably governed by the law of supply and demand. It must be borne in mind that the successful trader anticipates the market 30 to 60 days hence. In retrospect, the heavy consumption of old material by the steel and the foundry industries since Dec. 1, considering all seasonal factors, was ample warrant for the strong market.

Compared with a year ago and in the face of a decline from the peak reached in February, the leading grades of scrap in representative markets show a rise of 23 per cent. Some important classifications are priced over $5 per ton higher than a year ago. This is one danger signal. Another is the certainty of a spring letdown in general manufacturing. Since consumption of iron and steel and its resulting by-product of scrap are 30 to 60 days, on the average, behind actual production, the flow of scrap will be heavy for some time after the melt at steelworks and foundries has past its peak.

At the recent session of the Institute of Scrap Iron and Steel at New York many dealers foresaw a slowly subsiding market. For the wise trader there is nothing discouraging in this outlook, since proper recognition of the trend insures profits on either side of a market. A canny application of the law of supply and demand now, as in the past, is the safest guide to scrap's maneuverings.

Repairs the Sequel to Records

NOT human labor but mechanical effort is the vehicle for the current record production of iron and steel. And there being no accumulation of stocks, it may be assumed that finishing and metalworking operations in general also are at an unprecedented level. Certain it is that the iron, steel and metalworking plant of the country is being utilized as never before.

Such a pace cannot help but take its toll of equipment. Blast and open-hearth furnaces cannot be pressed to practical capacity without linings and walls wearing away, and already the makers of refractories note improved business. Lathes, grinders, milling machines, foundry systems and similar equipment cannot be operated two and three shifts daily, in some instances 50 per cent more than a year ago, without shortening their production-expectancy.

It is heartening, too, to realize that the volume of business which is bearing down on equipment is also fortifying the consuming industries financially for the forthcoming period of repairs. Something more valuable than records—the experience which will lead to improved methods and equipment—may come out of the present pressure upon the metalworking industries. Today is the boast of the producer, but tomorrow will belong to the equipment maker, and the far-seeing ones already are preparing for this aftermath.

"Obsolete" Yesterday; a Market Today

MANUFACTURERS of steel products frequently widen their markets by their ingenuity in revising old methods and improving equipment. Of the many instances of this kind that might be cited, one of the most interesting is the development of modern facilities for domestic heating by means of oil.

Only a few years ago the home cookstove using oil for fuel was considered obsolete and dangerous. By making them safe and convenient, manufacturers overcame the principal objection to the use of oil, and not only increased their sales of stoves and ranges for the kitchen, but also broadened the demand for appliances for burning oil in domestic furnaces. A total of 17,000,000 barrels of oil was consumed during 1928 by the 422,700 burners in American homes, and it is estimated that consumption for the current year will reach 23,538,000 barrels, or approximately 988,596,000 gallons of oil.

The advantage of this to the steel industry is that oil becomes available where gas cannot be obtained, or where the price of other fuels may be prohibitive. It benefits the manufacturers of certain steel products.

Recent improvements in other equipment for burning oil have opened new markets. On Jan. 1, 1929, 33,500 oil burner installations were in operation for commercial heating, that is, in large apartment buildings, office buildings, theaters, schools and similar structures. It is estimated that 777,000,000 gallons of oil will be used for this commercial heating in 1929. Of all the oil consumed in the United States last year it is estimated that 9.90 per cent was used in oil heaters, and of this amount 4.99 per cent was used for domestic heating and 4.91 per cent for commercial heating.

Of course, the day is far distant when the consumption of coal merely for heating purposes will be prohibited, as some economists predict, but it is a foregone conclusion that there will be steady improvement in equipment for more economical use of fuel of all kinds, and manufacturers of steel products are on the alert for them.

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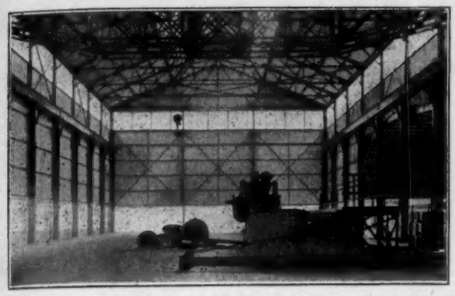

First Tin Mill West of Mississippi River Established in Pittsburg, Calif. Page 782.

IMPORTANT events bearing on iron and steel tariff schedules are developing in Washington. The American Iron and Steel institute has filed supplementary briefs with the house ways and means committee, recommending that manganese ore be admitted duty free; that the tariff on pig iron be raised from $1.125 to $3 and that steel be slightly advanced. Subcommittees have held hearings, and the next step will be meetings of the full house committee to frame the new bill. IRON TRADE REVIEW will report the proceedings. The major features to date are summed up in the article beginning on page 819.

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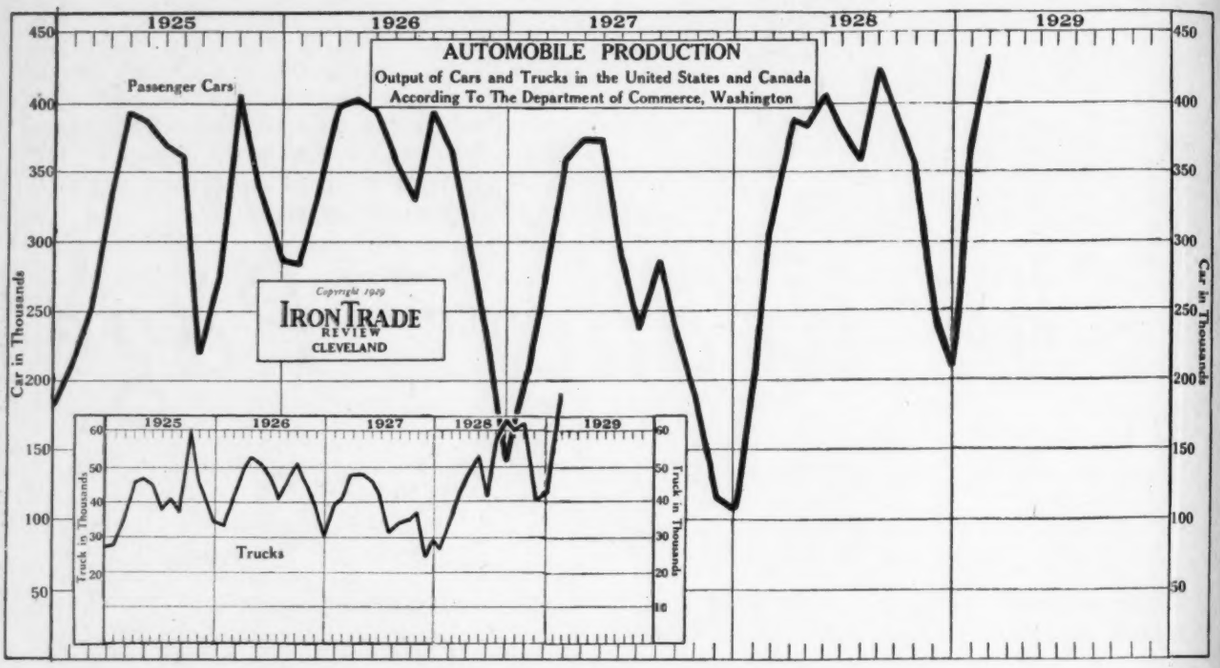
The Business Trend



Motor Car Outlook Scanned

By JOHN W. HILL, Financial Editor

DURING February a new high record of production of automobiles for that month was attained. The total was approximately 450,000 cars and trucks in the United States, according to preliminary estimates. This figure compares with 402,000 cars and trucks produced in January and with 323,000 for February, one year before.

FOR the opening months of the current year, the automobile industry has come fully up to the most glowing expectations. Production has been large and March probably will witness another new record. But signs are accumulating that the peak is near at hand and that some seasonal letdown may be in the offing.

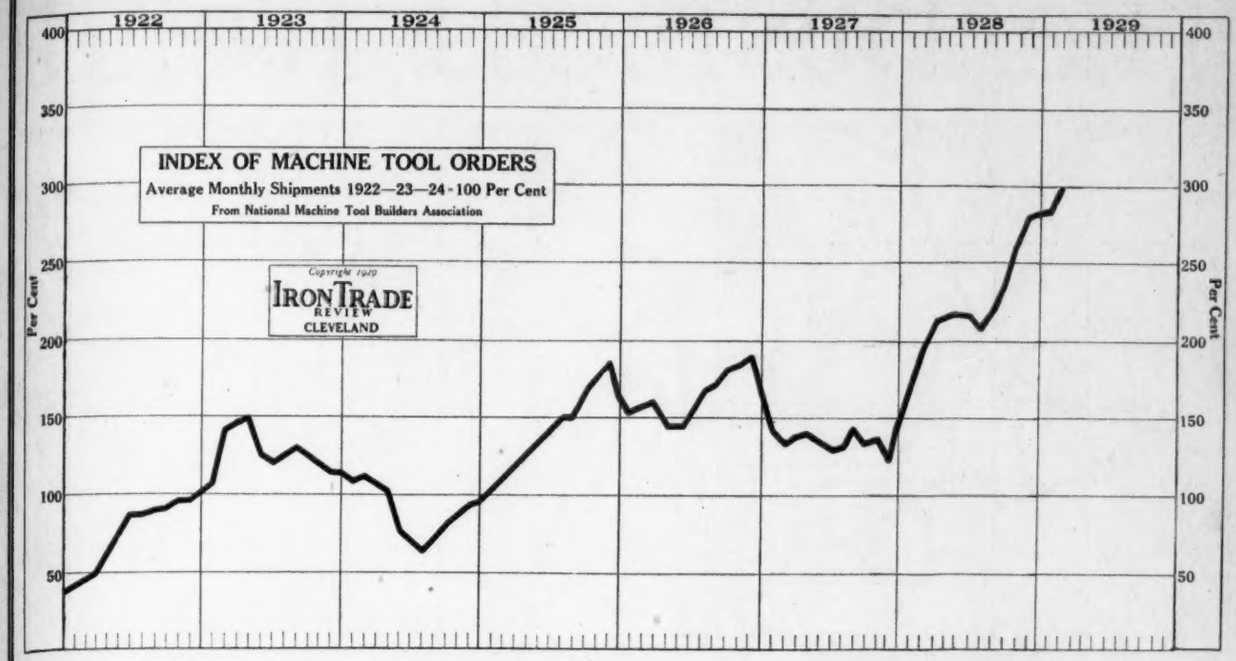
AS IS usually true of the automobile industry, the season has developed popular favorites, while others have lagged behind in the appeal to public fancy. This is inevitable in view of the large overcapacity of the industry. The current market, extraordinary as it is, is inadequate to absorb all the cars that could be produced. The result is some spottiness, and this is appearing as the season advances and demand becomes more clearly defined.

IF IT is true that the top of spring activity in motor car manufacturing is near, is a sharp decline likely to follow? The answer to this question has an important bearing upon the outlook for the iron and steel trade, because of the ranking place of the automobile industry as a consumer of steel materials. From present indications no precipitate letdown is probable.

THE country's purchasing power is high, motor car replacement needs are large and motor exports are expanding. Popular demand may divert an increasing share of production in the hands of certain producers, but measured by normal standards the output of cars following the spring peak promises to remain fairly high. At present about 54 per cent of the country's output is being turned out by two makers.

ONE of the most interesting developments of recent months has been the important expansion in orders for machine tools. During February the index of orders reached the highest level since 1919. American industry in recent months has been installing on a large scale equipment designed to increase the efficiency of operation and lower costs.

The Business Trend

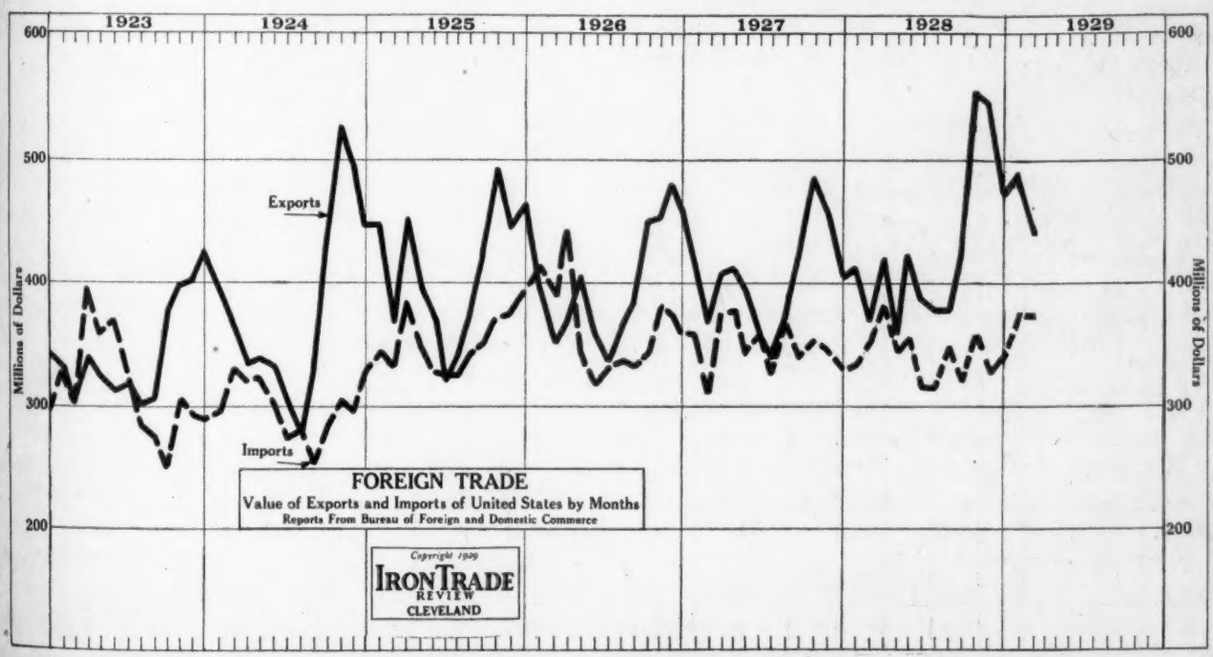


Machine Tool Orders

THREE months' moving average of orders for machine tools, as computed by the National Machine Tool Builders' association, advanced over the 300 mark in February for the first time since 1919. The largest percentage gain in orders was shown by the "C" group. This comprises orders for those companies whose shipments in 1922 to 1924 average less than $10,000 a month. The index stood at 285.6 one month before and 195.8 one year ago. Unfilled orders for machine tools are at a new peak.

Foreign Trade

EXPORTS of American merchandise in February totaled $444,000,000, compared with $491,000,000 in the preceding month and $371,448,000 in February, 1928. Imports during the month amounted to $371,000,000 compared with a like figure in January and $351,035,000 in February, 1928. For the first two months of the year the value of American exports was $931,956,000, compared with $782,226,000 in the corresponding period of 1928. Imports were valued at $739,636,000.



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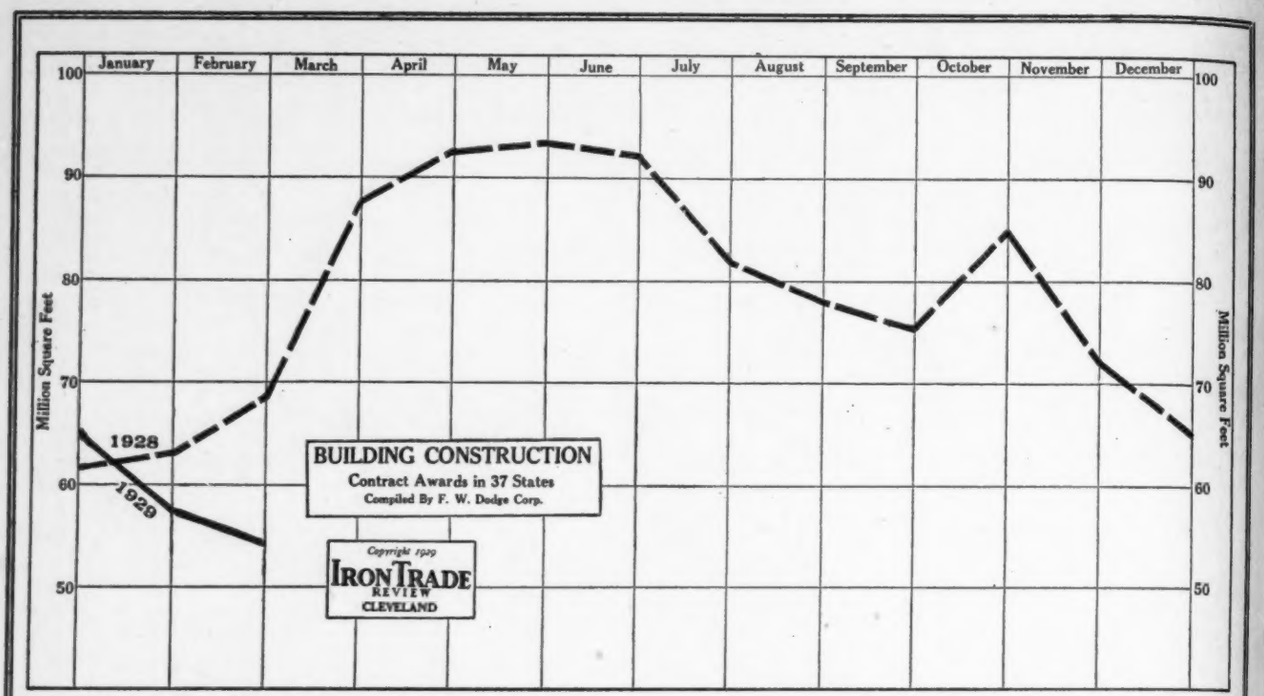
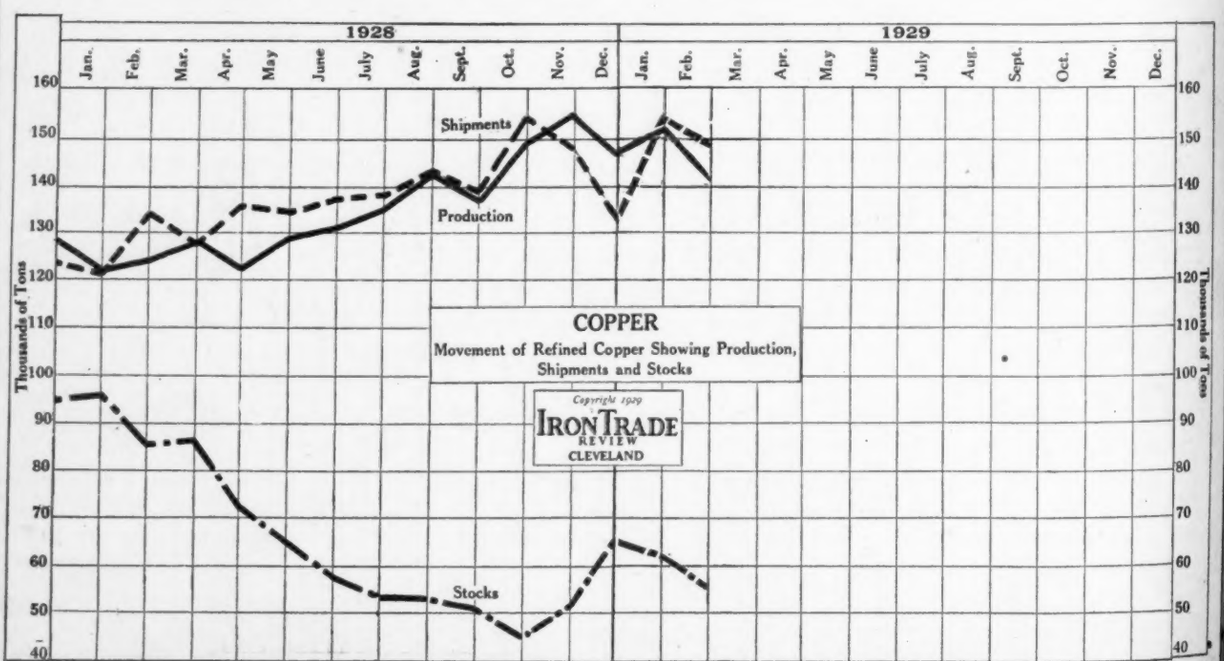


Building Construction

BUILDING construction in the United States has been showing a declining tendency in recent months. This reflects the influence of higher money rates. Most of the slackening has been in speculative home building around eastern metropolitan centers. Industrial building is large. Contract awards in 37 states for February were 54,000,000 square feet, compared with 58,000,000 square feet in January and 65,000,000 square feet one year ago. February building in some sections was record breaking.

Refined Copper

STOCKS of refined copper in the hands of producers at the close of February totaled 55,213 tons, compared with 62,749 tons one month before. One year ago stocks stood at 86,932 tons. Shipments for the month set a new record for February, totaling 148,921 tons compared with 134,392 tons in February, 1928. Production of 141,385 tons was at a daily rate of 5049 tons, this record being exceeded only once in the past. Copper prices have advanced to 22 cents a pound, with a tight delivery situation prevailing.



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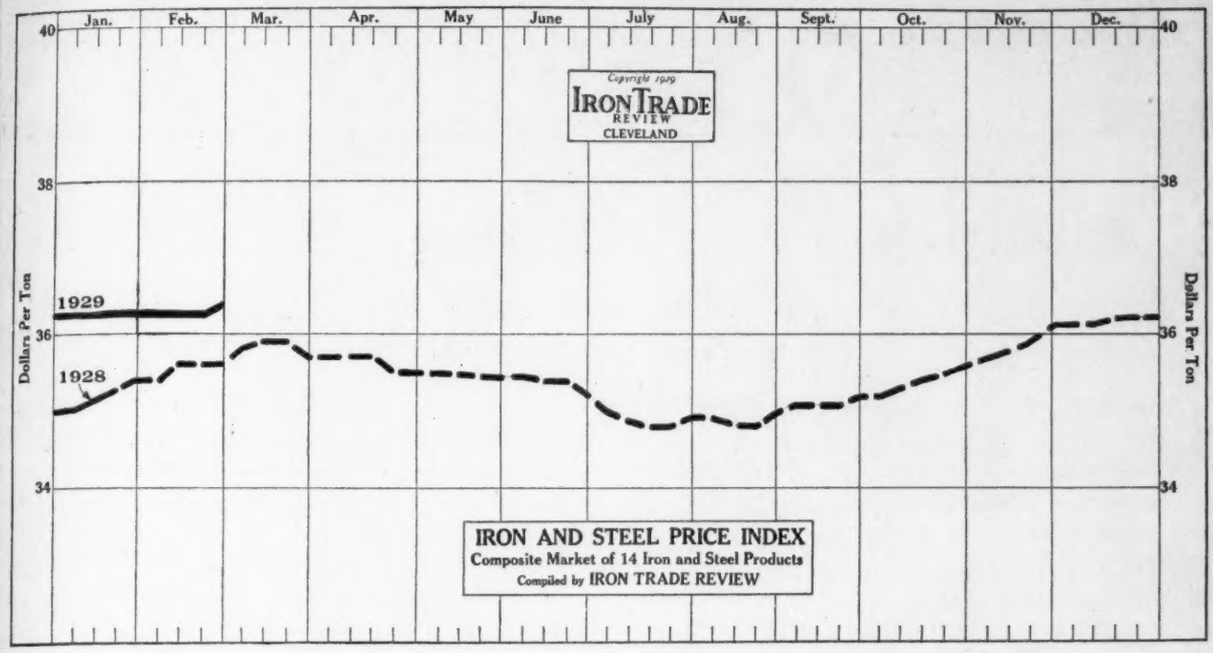
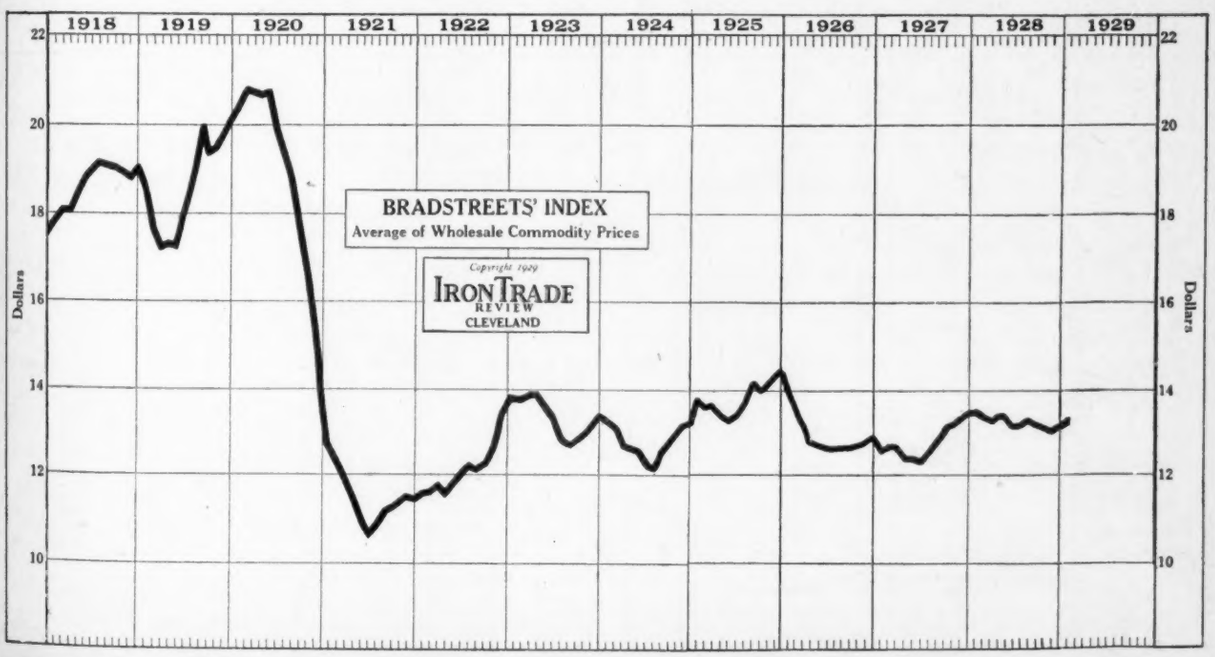


Steel Price Index

IRON and steel prices have continued to hold steady in the face of record-breaking production and shipments. The fact that underlying market conditions have held firmly indicates the vast and urgent scope of requirements for iron and steel products. IRON TRADE REVIEW'S composite markets average for the second week of March stood at $36.37 a ton, a figure that has held unchanged for three weeks. One month before the average stood at $36.28 a ton, and one year ago the composite was $35.81 a ton.

Bradstreets Index

WHOLESALE commodity prices, measured by Bradstreet's index number, showed little change on the average in February. Analysis of the movements of various groups of commodities, however, discloses a number of changes, the bulk of them being on the upside. Of the 13 groups of commodities making up the index, eight advanced during February while four declined and one remained unchanged. Livestock and metals were among the groups to advance with copper rising spectacularly.



Steelmaking Continues at Capacity

Spring Buying Beginning to Impose Further Burden on Mills—Talk 25c Ore Advance—Semifinished Steel Shortage Acute

SEASONAL requirements for steel are making their contribution to the unprecedented market situation. Canmakers' specifications are stimulating production of tin plate, a moderate increase in sales of wire products for rural consumption is developing, while important highway and building projects are maturing. Meanwhile, specifications from the railroads, carbuilders, and automobile and parts makers are undiminished.

Steelmakers "Shop" for Semifinished Material

Deferred deliveries continue to vex both producers and consumers despite capacity output of such important lines as sheets, strip, bars and plates. Increasingly are mills accepting specifications with delivery stipulated at their convenience. The shortage of semifinished steel has sent even integrated producers into the open market, usually in vain. One steelmaker has bought 30,000 tons.

This tight delivery situation may obscure the transition from the first to the second quarters. For some large consumers the specifications they have already submitted to the mills will carry them a good distance into the coming quarter. As usual, there has been some waiving of the March 15 deadline for specifying first-quarter material. Second quarter contracts for wire products exceed those of a year ago, while coverage of cold finished bars has been heavy.

The continued pressure upon operating departments seems to assure a record March. Expansion of tin plate output from 85 to 90 per cent has pushed steelmaking at Pittsburgh over 90 per cent. Chicago is held down to 95 per cent by the lack of semifinished steel, and some hot mills there have been forced down to a 5-day week schedule. Thirty-three out of 37 open hearth furnaces at Buffalo are making steel. More bessemer and pipe capacity has been put on at Youngstown, where steelworks average 90 per cent. Steel corporation subsidiaries operate at 96 per cent, a shade lower than last week.

Steady Selling Nets Big Iron Tonnage

Pig iron selling lacks the spectacular flavor of finished steel, but the steady week-to-week bookings account for a high tonnage for the coming quarter. In the East and at Cleveland some

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Mar. 20, 1929	Feb., 1929	Dec., 1928	March 1928
PIG IRON				
Bessemer, del. Pittsburgh	$20.26	19.86	20.01	19.21
Basic, valley	17.50	17.50	17.50	17.00
Basic, eastern del., eastern Pa.	20.25	20.50	19.75	19.50
No. 2 foundry, del. Pittsburgh	19.76	19.26	19.76	19.01
No. 2 foundry, Chicago	20.00	20.00	20.00	18.50
*Southern No. 2, Birmingham	15.50	16.50	16.50	16.00
*Southern Ohio, No. 2 Ironton	18.50	18.50	18.50	19.00
**No. 2X, Virginia furnace	21.25	21.25	20.50	20.50
**No. 2X, eastern del. Phila.	22.26	22.01	22.01	21.26
Malleable, valley	18.00	18.00	18.00	17.25
Malleable, Chicago	20.00	20.00	20.00	18.50
Lake Superior charcoal, del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	19.26	18.76	18.76	18.51
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	104.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	3.00	2.90	2.75	2.60
Connellsville, foundry, ovens	3.75	3.75	3.75	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	34.25	34.00	33.75
Sheet bars, open-hearth, Pittsburgh	35.00	34.25	34.00	33.70
Billets, open-hearth, Pittsburgh	34.00	33.25	33.00	33.00
Wire rods, Pittsburgh	42.00	42.00	42.00	44.00

	Mar. 20, 1929	Feb., 1929	Dec., 1928	March 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.90	1.90	1.90	1.90
Steel bars, Chicago	2.05	2.00	2.00	2.00
Steel bars, Philadelphia	2.27	2.27	2.27	2.17
Iron bars, Chicago	2.00	2.05	2.00	2.00
Shapes, Pittsburgh	1.90	1.90	1.90	1.90
Shapes, Philadelphia	2.01	2.01	2.06	2.08
Shapes, Chicago	2.05	2.00	2.00	2.00
Tank plates, Pittsburgh	1.90	1.90	1.90	1.90
Tank plates, Philadelphia	2.15	2.10	2.10	2.10
Tank plates, Chicago	2.05	2.00	2.00	2.00
Sheets, black, No. 24, Pittsburgh	2.85	2.85	2.85	2.85
Sheets, blue anl., No. 10, Pittsburgh	2.10	2.10	2.10	2.10
Sheets, gal., No. 24, Pittsburgh	3.60	3.60	3.60	3.75
Sheets, black, No. 24, Chicago	3.10	3.00	3.00	3.05
Sheets, blue anl., No. 10, Chicago	2.35	2.25	2.25	2.25
Sheets, galvanized, No. 24, Chicago	3.85	3.75	3.75	3.90
*Plain wire, Pittsburgh	2.50	2.50	2.45	2.50
*Wire nails, Pittsburgh	2.65	2.65	2.60	2.65
Tin plate, per base box, Pittsburgh	5.35	5.35	5.35	5.25
*To large jobbers				
SCRAP				
Heavy melting steel, Pittsburgh	18.50	18.60	17.60	14.75
Heavy melting steel, eastern Pa.	16.25	16.30	15.35	13.75
Heavy melting steel, Chicago	15.50	16.00	14.50	12.75
No. 1 wrought, eastern Pa.	16.25	16.25	15.50	15.25
No. 1 wrought, Chicago	16.25	15.75	14.50	12.45
Rails for rolling, Chicago	17.50	17.50	16.50	14.45

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

STEEL PLATES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	2.10c to 2.25c
New York, del.	2.175c to 2.325c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y., base	2.00c to 2.10c
Birmingham, base	2.10c to 2.20c
Coatesville, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.20c to 2.25c
St. Louis, del.	2.22c

STRUCTURAL SHAPES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	2.01c to 2.06c
New York, del.	2.145c to 2.245c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y.	2.00c to 2.10c
Birmingham, base	2.10c to 2.20c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c

BARS

SOFT STEEL

Pittsburgh, base	1.90c to 1.95c
Chicago, base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Lackawanna, N. Y., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c to 1.95c
Cleveland, del., outside mills	1.95c to 2.00c
Philadelphia, del.	2.22c to 2.37c
New York, delivered	2.24c to 2.39c
Boston, delivered	2.265c to 2.415c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.00c to 2.10c
New York, delivered	2.19c to 2.24c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.25c to 2.30c
Stock lengths from mill	2.00c to 2.05c
Chicago, billet	2.25c to 2.35c
Chicago, rail steel	1.95c to 2.05c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.57c to 2.62c

COLD FINISHED STEEL

Cold finished steel bars drawn or rolled, Pitts., Chi., c.l.	2.30c
Do, del. Detroit	2.575c
Shafting (turned, polished) Pittsburgh	2.30c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.65c to 3.10c
Cold finished steel bars, Cleve.	2.25c to 2.35c

TIN AND TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35
Gary, Ind., base 10 cents higher.	
Long ternes, primes, No. 24	4.00c to 4.10c

*Price subject to quantity differentials.

SHEETS

SHEET MILL BLACK

No. 24, Pittsburgh, base	2.85c to 2.95c
No. 24, Philadelphia, delivered	3.17c to 3.27c
No. 24, Gary, Indiana Harbor	3.05c
No. 24, Chicago, delivered	3.10c
No. 24, Birmingham, base	3.10c
No. 24, St. Louis, del.	3.27c

TIN MILL BLACK

No. 28, Pittsburgh, base	3.00c
No. 28, Gary, base	3.10c

GALVANIZED

No. 24, Pittsburgh, base	3.60c to 3.70c
No. 24, Philadelphia, delivered	3.92c to 4.02c
No. 24, Gary, Indiana Harbor	3.80c
No. 24, Chicago, delivered	3.85c
No. 24, Birmingham, base	3.85c
No. 24, St. Louis del.	3.92c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.10c to 2.20c
No. 10, Philadelphia, delivered	2.42c to 2.52c
No. 10, Gary, Indiana Harbor	2.30c
No. 10, Chicago, delivered	2.35c
No. 10, Birmingham, base	2.35c
No. 10, St. Louis, del.	2.42c

AUTOMOBILE

No. 20, Pittsburgh, base	4.10c
No. 20, delivered Detroit	4.39c

FURNITURE

No. 24, Grade A, Pittsburgh	4.00c to 4.10c
No. 24, Grade B, Pittsburgh	3.80c to 3.90c

(Turn to the following page)

third quarter inquiry has appeared. Shipments are expected to set a new high March record in many districts. A mixed price tendency results from a reduction of $1 by a maker at Birmingham, Ala., while last week's advance of 50 cents in the foundry and malleable grades in the Mahoning valley has become general.

Pending subway work at New York has reached proportions requiring 81,200 tons of structural steel. Plans will be out shortly for an elevated roadway in New York, taking 22,000 tons. More favorable weather is an aid to building in all districts, and at Chicago deliveries of plain material are falling behind. Concrete reinforcing bars share in this activity, with price weakness at Chicago a contrast to the $1 per ton advance at New York and Pittsburgh.

12,000 Freight Cars Before Builders

Sixty thousand tons of rails, principally for the Chicago, Milwaukee, St. Paul & Pacific and Southern railroads, was about evenly divided between eastern and western mills this week. Freight car inquiry has been augmented by 2500 box cars for the Chicago & North Western. Twelve thousand freight cars are now on active inquiry.

So filled with business are plate mills at Chicago that on some sizes twelve weeks is the best delivery now promised. Sixteen thousand tons, evenly divided between refinery work at East Chicago, Ind., and the South, was put on mill books this week at Chicago. Some moderate line pipe jobs, taking plates, are shaping up. Second quarter skelp contracts at 1.90c, Pittsburgh, have been closed in the Mahoning valley.

While plate mill operations at Pittsburgh have been stepped up moderately, neither there nor at Chicago do they match the rates of bar mills. New bar sales at Chicago this week were the third best of the year. Sheet and strip mills generally have made no inroads on their backlogs, with automotive users still dominating.

Lake Ore Buying About to Start

Some Lake Superior iron ore interests are discussing an advance of 25 cents per ton for the 1929 season, a 6 per cent advance over the present price of $4.25 for Mesabi nonbessemer. Contracting may start next week. A heavier shipping season than 1928 is expected.

American Iron and Steel institute has submitted specific tariff recommendations to the house ways and means committee at Washington, in general recommending increased protection of finished products, a return of manganese ore to the free list and a reduction on ferromanganese, with important changes in classifications.

Permissible production of members of the European steel entente has been increased 2,000,000 tons annually, to 31,287,000 tons, quotas of the various countries being expanded proportionately.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (March 20, 1929)	$36.37
Last week (March 13, 1929)	36.37
One month ago (February, 1929)	36.28
Three months ago (December, 1928)	36.22
One year ago (March, 1928)	35.81
Ten years ago (March, 1919)	52.28
Fifteen years ago (March, 1914)	23.60

Advances in pig iron in eastern Pennsylvania cancel the $1 reduction in southern iron, with the result the IRON TRADE REVIEW composits of fourteen leading iron and steel products is unchanged at $36.37 for the fourth week.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED
SEE ALSO PRECEDING PAGE

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	2.00c
Hot strip 6 1/1 to 24-in., Pitts.	1.90c
Hot rolled strip, 12 to 24-inch 16 gage and heavier, coils or cut length, 1.90c plate basis, or 2.10c blue annealed basis.	
Hot strip, bands 6 in. and under, Chicago	2.20c to 2.30c
Do, 6 1/8 to 24 in.	2.10c to 2.20c
Cooperage stock	2.20c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 ton and over)	2.75c to 2.85c
Worcester, Mass. (3 tons and over)	3.10c to 3.20c

ALLOY STEEL

Hot Rolled
F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net, 100 lb. bars
2000	0.25	$3.00
2100	0.55	3.30
2300	1.50	4.25
2500	2.25	5.00
3100	0.55	3.30
3200	1.35	4.10
3300	3.80	6.55
3400	3.20	5.95
4100 0.15-0.25 Mo.	0.50	3.25
4100 0.25-0.40 Mo.	0.70	3.45
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.80
5100 0.60-0.90 Cr.	0.35	3.10
5100 0.80-1.10 Cr.	0.45	3.20
5100 Chrome Spring	0.20	2.95
6100 Bars	1.20	3.95
6100 Spring Steel	0.95	3.70
Chrome Nickel Vanadium	1.50	4.25
Carbon Vanadium	0.95	3.70
9250 (flats)	0.25	3.00
9250 (rounds squares)	0.50	3.25

TUBING

Boiler

Carload Discounts—F.o.b. Pittsburgh Mills

Steel (lapweld) 3 1/4 to 3 3/4-inch	56
Charcoal iron, 3 1/4 to 3 1/2-inch	18
Seamless hot rolled 3 1/4 to 3 1/2-inch	56

Lapwelded steel takes two supplementary 5 per cents for carload lots; charcoal, 10 per cent; seamless, 5 per cent.

Note: Discounts for additional sizes and l.c.l. shipments given on last editorial page.

COLD DRAWN SEAMLESS

F.o.b. mill in desirable quantities

Random lengths, over 5 feet	55 per cent
Selected lengths, 1 to 18 feet	53 per cent

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base

(Per pound)	Dealer trade	Large jobbers
Bright plain wire, 6 to 9 gage	2.60c	2.50c
Annealed field wire	2.75c	2.65c
Galvanized wire	3.20c	3.10c
Barbed wire, galvanized	3.40c	3.30c
(Per 100-pound keg)		
Wire nails	$2.75	$2.65
Galvanized nails	4.75	4.65
Polished staples	3.20	3.10
Galvanized staples	3.45	3.35
Cement coated nails	2.75	2.65
Manuf. wire, del. Detroit		2.735c
Wire nails, del. Detroit		$2.885

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base on products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher, Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN PILING

Cut nails c.l., f.o.b. mills	2.75c
Cut nails, l.c.l. f.o.b. mills	2.85c
Chain, 1-in., proof coil, Pitts.	6.00c
Sheet piling, base, Pittsburgh	2.25c

CAST IRON WATER PIPE

Prices per net ton
Class B pipe

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Four-inch, New York	42.80 to 44.80
Six-inch and over, New York	39.80 to 41.80
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20 gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

IRON AND STEEL PIPE

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50 1/2
1 and 1 1/4-inch butt iron**	31	15

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago del. 2 1/2 points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 per cent; on galvanized by 1 1/2 points with a supplementary 5 per cent.

**Large jobbers obtain additional discount of 1 point with supplementary discounts of 5 and 2 1/2 per cent on black and galvanized. For add. sizes see last editorial page.

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relaying rails, St. Louis	$24.00 to 31.00
Relay rails, Pitts.. 60 to 90 lb.	$22.00 to 27.00
Light rails, 25 to 45, mill	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand, jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread 3/4 x 6 and smaller take 10 per cent lower list.

Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread 3/4 x 6 and smaller take 10 per cent lower list.

Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off

Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2 1/2 off in bulk.

Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	85 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc. c.l., Pitts-Cleve.	2.90c to 3.10c
Structural, c.l. Chicago	3.00c to 3.20c

**7/16-inch and smaller, Pitts. 70 and 10 off

Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock: to dealers	85-5 off
Lock: to consumers	85 off

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices Per Gross Ton

BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$34.00
Pittsburgh, bessemer	34.00
Youngstown	34.00
Cleveland	34.00
Philadelphia	33.30 to 33.30
Chicago	35.00
Forging, Chicago	40.00
Forging, Pittsburgh	38.00 to 39.00
Forging, Philadelphia	43.30 to 44.30

SHEET BARS

Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00
Chicago	35.00

SLABS

Pitts., Young., and Cleve.	$34.00

WIRE RODS

Pittsburgh, Cleveland	$42.00
Chicago	43.00

SKELP

All grades, Pittsburgh	1.90c to 1.95c

IRON ORE

LAKE SUPERIOR ORE
Per Gross Ton, Lower Lake Ports

Old range bessemer, 51 1/2 %	$4.55
Mesabi bessemer, 51 1/2 %	4.40
Old range nonbessemer, 51 1/2 %	4.25
Mesabi nonbessemer, 51 1/2 %	4.25

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63 %	8.00
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN ORE
Cents per unit, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55 % iron, 6-8 % manganese	10.50 to 11.00
North African low phosphorus	11.50 to 11.75
Swedish foundry or basic, 65 %	9.00 to 10.00
Spanish and North African basic, 50 to 60 per cent	10.00 to 11.00
Newfoundland foundry, 55 %	8.50 to 9.00
Tungsten spot and early fut., short ton unit, duty paid	$12.25

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian	35 cents
Indian	35 to 36 cents
Caucasian, (53-55 per cent)	36 to 38 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, imported duty paid east. tide., gross ton	$19.90 to 20.40

REFRACTORIES

FIRE CLAY BRICK
Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK
Per Net Ton

9 x 4 1/2 x 2 1/2	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base	
Dead-burned grain magnesite	40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base	
9 x 4 1/2 x 2 1/2	45.00

Pig Iron

Valley Prices Stronger, While Birmingham Drops $1 to $15.50—Sales and Shipments Continue at Sustantial Rate

ADDITIONAL strength in the valley and eastern markets, and a softening of prices at Birmingham, Ala., are outstanding features of the pig iron market. The minimum on valley foundry iron now appears to be $18, while bessemer has moved up 25 cents to a flat price of $18.50. Buffalo furnaces are firmer. The reduction at Birmingham amounts to $1, the new price being $15.50, base, furnace, although some sales previously were made at $16.50 for second quarter. The lower price is expected to have some effect at St. Louis, but not in the Chicago district. Other lake furnaces do not anticipate important sales of southern iron north of the Ohio river. Sound conditions continue to prevail in the general market, with sales and shipments heavy.

PITTSBURGH, March 19.—A number of sales of pig iron have been made at the higher prices announced a short time ago, although large tonnages are lacking. Several important melters covered requirements before prices were advanced, and are out of the market. Some grades appear fairly well established at the higher levels. One furnace interest booked a total of 1000 tons of bessemer iron recently, all at $18.50, valley. Smaller sales of malleable were made at the same price. No. 2 foundry is holding to $18, valley, though sales are restricted to small lots, following the closing of second quarter requirements by large local melters at $17.50. Basic iron is quiet. One small lot was placed at $18, but this price is not fully established. No letup is noted in shipments on contracts. Furnace operations are maintained at the previous high rate.

Boston, March 19.—Sales of pig iron during the past week aggregated 7000 tons, in which Mystic Iron Works shared to the extent of 5000 tons. Prices are firm, with York state and Buffalo iron in limited supply.

New York, March 19.—Heavy business has featured pig iron here. The past week's sales aggregated fully 20,000 tons, for second quarter, with some runover into third quarter. A noticeable stiffening in prices has followed the bookings of this business. Prices lower than $17.50, base, Buffalo, now practically have disappeared from this territory. Two Buffalo producers are out of the market. New inquiry is limited. Consumption of iron in this territory continues heavy, showing an increase in some directions.

Buffalo, March 19.—Buying of pig iron continues brisk, although mainly in small lots. Furnaces are booked heavily for second quarter. Makers deny they are shading prices in the East and assert that $18, base, furnace, is minimum for foundry iron for outside shipment, and $18.50 for malleable. New York state prices are 50 cents higher. A large tonnage of iron is to be shipped by canal barge as soon as navigation opens.

Youngstown, O., March 19.—The stiffening of the valley market by 50 cents on No. 2 foundry to $18, furnace, appears to be extending to other grades. Two outlying stacks that had been holding to the former price levels of $17.50 on these grades, now appear to be practically sold up for second quarter. Additional sales in lots of several hundred tons are being made by local furnaces at the advanced quotation, and $18.50 for malleable appears to be the general market level here. There seems more disposition to insist on $18, furnace, for basic.

The opening of some Birmingham, Ala., district furnaces for second quarter pig iron at $15.50, Birmingham, came as a surprise to furnacemen in this district. They had rather expected the first quarter price of $16.50 would be maintained, and in fact, they had sold considerable pig iron for the second quarter on that basis.

Cleveland, March 19.—Steady buying on a substantial basis is the keynote of pig iron. No indication of a spectacular buying movement for second quarter has developed, and makers say none was expected after the continuous, week-after-week volume of business booked in the past two months. Sales by furnace interests with headquarters in Cleveland amounted to 43,500 tons the past week, compared with 40,600 tons the week preceding, and 45,200 tons the week before that. Some companies will carry considerable undelivered first quarter tonnage on their books for second quarter, despite the fact each month so far this year has shown an increase in shipments. All have good backlogs for second quarter. Weak spots in the valley price structure have disappeared, according to Cleveland sellers, and $18, base, valley, for foundry and $18.50 for malleable now are general. Decrease of $1 in southern iron, to $15.50, base, Birmingham, does not worry northern Ohio sellers, as they figure southern iron could not come north of the Ohio river. Improvement in the valley has strengthened the tone of the northern Ohio, Michigan and Indiana markets, though no price changes are reported. Cleveland furnaces continue to book orders at $19, base, furnace for local delivery, and $18.50, base, furnace, for distant competitive points.

Cincinnati, March 19.—The rush to place second quarter pig iron business has slackened, although sellers report fair activity. Prices on northern iron remain steady, but southern furnaces have dropped prices $1, making the furnace price $15.50, and the delivery price at Cincinnati, $19.19. A lake furnace is reported to have placed about 1200 tons in this market during the week. This is reported to have been placed at a slightly lower price because of better freight differentials.

Chicago, March 19.—Stronger markets in outlying districts, notably the valley market, have placed merchant pig iron furnaces in this district in a

(*Concluded on Page* 808)

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$18.50
Bessemer, del. Pittsburgh	20.26
Basic, valley furnace	17.50 to 18.00
Basic, del. Pittsburgh	19.26 to 19.76
Basic, Buffalo furnace	17.50
Basic, del. eastern Pa.	20.25 to 20.50
Malleable, valley furnace	18.00 to 18.50
Malleable, del. Pittsburgh	18.76 to 19.26
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buffalo furnace	19.00
Malleable, del. eastern Pa.	22.26 to 22.91
Malleable, Granite City fur.	20.50
No. 1 foundry, Chicago furnace	20.50
No. 1X, eastern del., Phila.	22.76
No. 1X, Buffalo furnace	20.00
No. 2 foundry, valley furnace	18.00
No. 2 foundry, del. Pittsburgh	19.76
No. 2 plain, Buffalo furnace	18.50
No. 2 foundry, Chicago furnace	20.00
No. 2 foundry, Granite City	20.00
No. 2 foundry, Ironton furnace	18.50
No. 2 fdy. Cleve. fur. for local del.	19.00
No. 2 plain, del., Phila.	21.76
No. 2 plain, Virginia furnace	20.75
No. 2 plain, Buffalo, del. Boston	22.41 to 22.91
No. 2 plain, N. J., tidewater	20.78 to 21.28
No. 2 Tenn., del. Cincinnati	19.19 to 20.19
No. 2 Alabama, del. Birmingham	15.50 to 16.50
No. 2 Tenn., Birmingham base	15.50 to 16.50
No. 2 Alabama, del. Cincinnati	19.19 to 20.19
No. 2 Alabama, del., Chicago	21.51 to 22.51
No. 2 Alabama, del. Cleveland	21.76 to 22.76
No. 2 Alabama, del. St. Louis	20.42
No. 2X, east. N. J., tidewater	21.28 to 21.78
No. 2X, eastern, del. Phila.	22.26
No. 2X, foundry, Buffalo furnace	19.00
No. 2X, Buffalo, del. Boston	22.91 to 23.41
No. 2X, Virginia furnace	21.25
Gray forge, val., del. Pittsburgh	19.26
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.26 to 24.76
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Superior, del., Chicago	27.04

CANADIAN PRICES

No. 2 foundry, del. Toronto	23.60
No. 2 foundry, del. Montreal	25.00 to 25.50
Malleable, del. Toronto	23.60
Malleable, del. Montreal	25.00 to 25.50
Basic, del. Montreal	24.00 to 24.50

Silvery iron, Jackson county, O., furnaces, in per cents: 5—$23 to $24; 7—$25 to $26; 8—$26 to $27; 9—$27 to $28; 10—$29 to $30; 11—$31 to $32; 12—$33 to $34; 13—$35 to $36.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$31 to $32; 11—$33 to $34; 12—$35 to $36; 13—$37 to $38; 15—$41.50 to $42.50; 16—$43 to $44.

The Market Section

Coke

Tone of Market Is Easier as Demand for Heating Fuel Subsides —Furnace Specifications Heavy

DEMAND for foundry coke is holding up well in the majority of districts, while sales of domestic heating grades have decreased rapidly. Seasonal conditions have had a softening influence in the Connellsville furnace coke market. Producers are receiving heavy specifications on contracts. No contracts for second quarter are noted below $3.

Pittsburgh, March 19.— Milder weather is exerting a softening effect in the beehive coke market. Producers are receiving heavy specifications on contracts, however, preventing their accepting spot business. Furnace fuel for prompt shipment is not plentiful, but the demand is light. Some sales to a middle interest are noted below $3, but consumer purchasing at that level is lacking. Producers are well booked and are encountering difficulty in filling contract requirements. They lack additional ovens in good condition for immediate operation. Second quarter contracting has not been completed. No transactions below $3 are noted. Foundry coke demand is irregular, with the best grades having the steadiest call. The market for heating coke is dull.

Production of coke in the Connellsville region for the week ended March 9 was 78,500 tons, compared with 78,230 tons the preceding week, according to the *Connellsville Courier*.

Boston, March 19.—Foundry coke specifications have improved. Prices are steady.

Cincinnati, March 19.—By-product coke demand continues fairly good. A lower price on domestic coke is expected, but no one has announced a change.

Philadelphia, March 19.—Demand for foundry coke here continues brisk, and comprises mainly specifications for shipment against contracts. The beehive coke market is not so firm. The foundry grade is $3.75 to $4, Connellsville, while furnace coke, recently strong, has declined to about $2.80 to $3.20, Connellsville, to consumers in this district. Premium brands of beehive foundry coke continue $4.85, Latrobe, Pa. By-product foundry coke continues $9 to $9.40, delivered at Newark, N. J., and at $11, delivered to most New England consuming points.

The Philadelphia Coke Co., which some months ago started operating its new battery of by-product ovens here, is selling coke to the foundry trade. The foundry grade is being sold by the Debevoise-Anderson Co. Inc. Not all the freight rates from the new ovens have been fixed, but the company is quoting a delivered price of $9 a ton to consumers in this immediate territory.

St. Louis, March 19.—Heavy shipments and a good volume of orders continue to feature the coke situation. Indications point to a continuation of such activity through the second quarter. Local by-product plants are operating near capacity, and their shipments of foundry and furnace grades are about equal to current output. Prices are steady.

Birmingham, Ala., March 19.—Coke prices still are firm, except domestic grades. By-product foundry coke is $5, f.o.b. ovens. Production is steady.

Coke Prices

Prices per Net Ton	
Beehive Ovens	
Connellsville furnace	$3.00
Connellsville foundry	3.75 to 4.85
New River foundry	6.00 to 6.50
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.75
By-Product Foundry	
Newark, N. J., del.	9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	10.03
Ashland, Ky., ovens	8.00
Portsmouth, O., ovens	8.00
Detroit ovens	9.00
Buffalo, ovens	8.75

Annual Meeting of Steel Corp. April 15

New York, March 19.—Stockholders of the United States Steel Corp. will be asked at the annual meeting, scheduled at Hoboken, N. J., April 15, to approve the plan recently announced by directors of the corporation for retiring bonds and the issuance of further common stock. Retirement of bonds of the issues of 1951 and 1963 will effect annual saving in fixed charges of $29,247,350.

According to the call for the meeting "the consummation of the plan will result in securing for the preferred stock greater protection through eliminating the prior lien of the bonds and also of a large fixed charge now having preference over the right of the preferred. It will likewise improve the position of the common stock through increasing the net income available for dividends even after providing, at the present rate, for the added dividends required for the new common shares."

A change in the employes' stock subscription plan will permit directors to issue new stock of the corporation in order to make it available to employes.

Ferroalloys

Specifications Close to Record—Prices Are Firm

Pittsburgh, March 19.—Ferroalloy business is heavier than a year ago, and specifications so far this year are close to a record level. Ferromanganese and spiegeleisen business for some mills is running ahead of the rate a month ago, in line with increased steelmaking operations at certain plants. With the exception of buying against contracts, however, the market is fairly quiet, with little spot business being placed. No divergence is seen from current prices of $34 for 19 to 21 per cent spiegeleisen, and $109.79, delivered, Pittsburgh, for ferromanganaese. Prices of special ferroalloys are steady and have shown no change.

New York, March 19.—Tungston ore is unusually strong and it looks as if none is obtainable at present for spot and early futures. The last sale was at $12.25 a short ton unit, duty paid. Special ferroalloys are strong, with large shipments. Prices are unchanged.

Pittsburgh Near Capacity

Pittsburgh, March 19.—Near-capacity operations in Pittsburgh district open-hearth furnaces hold ingot production to slightly better than 90 per cent. Practically the only change in schedules of finishing mills is an increase in tin plate production, now close to 90 per cent. Both strip and sheet mills are operating practically full. Wire making is between 50 and 60 per cent, although nail production is barely 20 per cent. Seamless tube producers are holding to about 80 per cent, with production of mechanical tubing and boiler tubes on a higher plane. Welded pipe operations, however, are lower, averaging around 50 per cent.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent, domestic furnace, spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.04 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload, producer's plant, net ton	160.00
Do, one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Quantity diff. apply on 100 tons and over.
*These prices contract, spot $5 higher.

Scrap

Consumer Resistance to Prices Continues — Scarcity in Most Grades Gives Market Strength

MELTERS of iron and steel scrap are resisting present quotations and are buying only bare necessities in an effort to break the market. Dealers have little stocks and consumption is heavy, shipments on contracts being steady. Supply is not large and railroad offerings are bringing good prices.

Chicago, March 19.—A strong undertone prevails in the iron and steel scrap market despite consumer resistances to present prices and a quietness in trading among dealers and brokers. The fact that consumption is at a rate seldom before reached, plus a notable scarcity in the best prepared grades, creates strengthening sentiment. Yards are nearly stripped of saleable grades. The month's railroad melting steel offerings sold at above $16.50, delivered, and the Santa Fe melting steel brought $16.80, delivered. Large consumers are seeking to hold the price of melting steel down to $16. Dealers, on the other hand, say they cannot now sell at that figure. Cast borings remain weak. Some dealers have been buying at $11, but others have revised their consumer quotations downward to $10.75, gross delivered. Scrap shipments to steelworks continue heavy, but melters can take all that is offered.

Boston, March 19.—While movement in scrap during the past week has been small, foundries continue to buy from yards within trucking distance. Business has been largely confined to

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except Detroit where dealers' buying prices are shown

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	12.00 to 12.50
Boston, dealers	12.00 to 12.25
Boston, No. 2	10.00 to 10.50
Buffalo, No. 1	16.50 to 17.50
Buffalo, No. 2	14.25 to 14.75
Chicago	15.50 to 16.00
Cincinnati, deal.	13.75 to 14.25
Cleveland, No. 1	15.50 to 16.00
Cleveland, No. 2	15.00 to 15.50
Detroit, No. 1	14.00 to 14.25
Detroit, No. 2	12.00 to 12.50
East Pa., del. mill	16.00 to 16.50
Eastern Pa. No. 2	12.00 to 14.50
N. Y., deal., R. R.	12.50 to 13.00
N. Y., deal., yd.	8.50 to 9.50
Pittsburgh, No. 1	18.00 to 18.50
Pittsburgh, No. 2	16.25 to 16.75
St. Louis, No. 1	14.00 to 14.50
St. Louis, No. 2	13.00 to 13.50
Valleys, No. 1	18.00 to 18.50

COMPRESSED SHEETS

Buffalo	15.00 to 16.00
Chicago	14.00 to 14.50
Cleveland	15.00 to 15.50
Detroit	14.00 to 14.25
E. Pa. new mat.	14.50
Pittsburgh	18.00 to 18.50
Valleys	18.00 to 18.25

BUNDLED SHEETS

Buffalo	12.50 to 13.00
Cincinnati, deal.	11.00 to 11.50
Cleveland	13.00 to 13.50
Eastern Pa.	11.00 to 11.50
Pittsburgh	16.50 to 17.00
St. Louis	10.00 to 10.50

SHEET CLIPPINGS LOOSE

Chicago	8.50 to 9.00
Cincinnati	9.75 to 10.25
Detroit	9.00 to 9.50
St. Louis	10.00 to 10.50

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Boston	11.25 to 12.25
Buffalo	19.00 to 20.00
Chicago, (3 feet)	18.50 to 19.00
Chicago, 2 ft. and under	19.50 to 20.00
Cincinnati, deal.	19.00 to 19.50
Detroit	17.00 to 17.50
Pittsburgh	20.00 to 20.50
St. Louis	16.75 to 17.25

STOVE PLATE

Birmingham	13.00 to 13.50
Boston consumers	11.50 to 12.00
Buffalo	14.75 to 15.00
Chicago, net	12.75 to 13.25
Cinn., deal., net	10.00 to 10.50
Detroit, net	9.50 to 10.00
Eastern Pa.	12.50 to 13.00
N. Y. deal., mill	8.75 to 9.00
Pittsburgh	12.50 to 13.00
St. Louis	13.75 to 14.25

ANGLE BARS—STEEL

Chicago	17.00 to 17.50
St. Louis	14.75 to 15.25

COUPLERS, SPRINGS

Buffalo	18.50 to 19.50
Chicago	17.00 to 17.50
Eastern Pa.	19.00 to 19.50
Pittsburgh	21.00 to 21.50
St. Louis	15.75 to 16.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	19.00 to 20.00
Eastern Pa.	19.00 to 20.50
Pitts. billet and bloom crops	22.00 to 22.50
Cleve. billet and bloom crops	17.50 to 18.00

FROGS, SWITCHES, GUARDS

Chicago	16.75 to 17.25
St. Louis	15.25 to 15.75

SHOVELING STEEL

Chicago	15.50 to 16.00
Cleveland	11.75 to 12.00
Detroit	10.75 to 11.00
Pittsburgh	18.00 to 18.50
St. Louis	14.00 to 14.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.50 to 11.50
Boston, dealers	11.50 to 12.00
Yard wrought	9.50 to 10.00
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	16.00 to 17.00
Chicago, No. 1	16.25 to 16.80
Chicago, No. 2	15.50 to 16.00
Cinn., No. 2	13.75 to 14.25
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 1	14.50 to 15.00
Pittsburgh, No. 2	18.00 to 18.50
St. Louis, No. 1	13.25 to 13.75
St. Louis, No. 2	14.00 to 14.50

SPECIFICATION PIPE

Boston	10.75 to 11.00
Eastern Pa.	15.50 to 16.00
New York, deal.	11.25 to 11.75

BUSHELING

Buffalo, No. 1	15.00 to 16.00
Chicago, No. 1	14.00 to 14.50
Cinn., No. 1 deal.	11.00 to 11.50
Cinn. No. 2	8.00
Cleveland, No. 1	13.00 to 13.50
Cleveland, No. 2	11.25 to 11.75
Detroit, No. 1	12.00 to 12.50
St. Louis, No. 1	10.00 to 10.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 8.50
Boston	6.25 to 6.50
Buffalo	8.25 to 8.75
Chicago	9.50 to 10.00
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.00 to 10.50
Detroit	7.25 to 7.50
Eastern Pa.	11.50
New York, deal.	8.00
Pittsburgh	10.50 to 11.00
St. Louis	8.00 to 8.50
Valleys	11.50 to 12.00

MIXED BORINGS, TURNINGS

For blast furnace use

Boston, dealers	6.00 to 6.25
Buffalo	11.75 to 12.25
Cincinnati, deal.	9.25 to 9.75
Cleveland	11.25 to 11.75
Detroit	9.00 to 9.25
Eastern Pa.	9.50 to 10.00
New York, deal.	6.25 to 6.50
Pittsburgh	11.50 to 12.00

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	8.00 to 8.50
Boston, chem.	10.00 to 10.50
Boston, dealers	6.50 to 7.00
Buffalo	11.75 to 12.25
Chicago	10.50 to 11.00
Cincinnati, deal.	9.25 to 9.75
Cleveland	11.50 to 12.00
Detroit	9.00 to 9.25
Eastern Pa.	11.00 to 11.50
Eastern Pa., chem.	14.50 to 15.00
New York, deal.	7.00 to 7.50
Pittsburgh	11.50 to 12.00
St. Louis	10.00 to 10.50

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	13.50 to 14.00
Chicago, net	12.50 to 13.00
Cincinnati	10.00 to 10.50
Eastern Pa.	12.50 to 13.00
New York, deal.	9.25 to 9.75
St. Louis	13.00 to 13.50

FORGE FLASHINGS

Boston, dealers	10.00 to 10.25
Buffalo	13.75 to 14.25
Chicago	10.50 to 11.00
Cleve., over 10 in.	13.00 to 13.50
Detroit	12.00 to 12.50
Pittsburgh (light)	15.00 to 15.50

FORGE SCRAP

Boston, dealers	9.00 to 9.50
Chicago	18.50 to 19.00
Eastern Pa.	13.50 to 14.00

ARCH BARS AND TRANSOMS

Chicago, net	21.50 to 22.00
St. Louis	22.00 to 22.50

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal	6.75 to 7.00
Buffalo	14.00 to 14.50
Chicago	13.00 to 13.50
Cleveland	12.50 to 13.00
Eastern Pa.	15.00 to 16.00
Pittsburgh	16.50 to 17.00
St. Louis	12.00 to 12.50

STEEL CAR AXLES

Birmingham	18.00 to 19.00
Boston, ship point	17.00 to 17.50
Buffalo	19.00 to 20.00
Chicago	18.50 to 19.05
Eastern Pa.	22.75 to 23.00
Pittsburgh	21.00 to 22.00
St. Louis	20.50 to 21.00

SHAFTING

Boston, ship point	14.50 to 14.75
Chicago	17.35 to 17.90
Eastern Pa.	19.00 to 20.00
New York, deal.	15.00 to 15.50
St. Louis	18.50 to 19.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	12.00 to 13.00
Boston, iron	14.00 to 14.50
Buffalo, iron	14.00 to 14.50
Buffalo, steel	18.50 to 19.50
Chicago, iron	14.50 to 15.00
Chi., rolled steel	19.00 to 19.50
Cincinnati	12.50 to 13.00
Eastern Pa. cast	16.50 to 17.00
Eastern Pa., rolled	19.00
N. Y., iron, deal.	12.50 to 13.00
Pittsburgh, iron	16.00 to 16.50
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	15.00 to 15.50
St. Louis, steel	17.00 to 17.50

No. 1 CAST SCRAP

Birmingham, cup.	14.00 to 14.50
Buffalo	16.00 to 17.00
Boston, textile	13.50 to 14.50
Chicago, mach.	17.90 to 18.50
Chicago, railroad	16.80 to 17.35
Chicago, agri.	16.25 to 16.80
Cincinnati, mach. cupolas, gross	19.50 to 20.00
Cleveland, cupola	16.50 to 17.00
Detroit, net	13.00 to 13.50
East. Pa., cupola	16.00 to 17.00
N. Y., cup., deal.	13.00 to 13.50
N. Y., del. local foundries	17.00 to 17.50
Pittsburgh, cupola	15.25 to 15.75
San. Fran., del.	13.50 to 14.00
Seattle	16.00 to 16.25
St. L. No. 1 mach.	16.00 to 16.50
St. Louis, No. 1	15.00 to 15.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	13.00 to 13.50
Cleve., breakable	12.50 to 12.75
Detroit, auto., net	18.00 to 18.50
Detroit, breakable	9.50 to 10.00
Eastern Pa.	15.75 to 16.00
New York, deal	11.75 to 12.50
Pittsburgh	12.75 to 13.25

MALLEABLE

Boston, railroad	16.50 to 17.00
Buffalo	17.50 to 18.50
Chicago, agri.	15.50 to 16.00
Chicago, railroad	18.50 to 19.00
Cinn., R. R., deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	16.00 to 16.50
Detroit, auto	14.00 to 14.50
St. Louis, rail	16.50 to 17.00

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	14.00 to 15.00
Boston, dealers	12.25 to 12.50
Rails scrap, Boston	11.00 to 12.25
Skeleton, Boston	9.00 to 9.50
Buffalo	16.00 to 16.50
Chicago	17.50 to 18.00
Eastern Pa.	18.00 to 18.50
New York	14.00 to 14.50
Pittsburgh district	18.00 to 18.50
St. Louis	16.00 to 16.50

LOCOMOTIVE TIRES

Chicago, cut	19.00 to 19.50
St. Louis, No. 1	15.50 to 16.00

LOW PHOS. PUNCHINGS

Chicago	18.00 to 18.50
Pittsburgh	20.50 to 21.00

heavy melting steel, steel turnings, blast furnace borings and turnings, some skeleton and forge flashings. There has been a fairly good demand for railroad malleable, but this grade is scarce.

New York, March 19.—Little fresh consuming demand for scrap is noted, but with supplies firmly held, dealers' buying prices are unchanged. Consumptive requirements are heavy and with prospects promising for continued good operations in the steel industry sellers generally are strong in their price views.

Philadelphia, March 19.—Several moderate tonnages of heavy melting steel have been sold at $16.50, delivered. Scattered sales have been made in other grades.

Buffalo, March 19.—Large deliveries of all grades of scrap are being made on contracts, but there has been no further tonnage buying. Blast furnace scrap shows unusual strength and is limited in supply. Dealers are paying close to recent contract prices for material to ship on orders.

Pittsburgh, March 19.—Continued active steelmaking operations are reflected in mill requirements for scrap, and shipments against orders are going forward steadily. New buying, however, is light and mills appear fairly well supplied. Heavy melting steel is nominal at $18 to $18.50, with dealers picking up material at the lower figure. Strength and a fair demand continue for steel specialties although no higher prices than $21.50 are heard, at which several orders for various railroad grades were placed recently. Easy tone displayed a short time ago and cast grades generally are unchanged. Compressed sheets are quotable at the range of No. 1 heavy melting steel.

Cleveland, March 19.—While buying is lacking here and in the Mahoning valley, shipments against heavy orders placed in February and March are almost double what they were last month. A lot of 5000 tons of machine shop turnings was sold at Detroit at $7.75. The delivered figure is understood to be $11.25 so they did not come here. That grade is quoted for local delivery at $10 to $10.50, having dropped 50 cents although buyers offer to buy at less. Blast furnace material is quoted at $11.50 to $11.75, with little interest manifested.

Cincinnati, March 19.—Dealers in iron and steel scrap are doing some buying and selling at fair prices, but the market generally is quiet. With mills busy, it is expected that buying will materialize at any time.

St. Louis, March 19.—Mills are using an increased tonnage of scrap, and the market for all grades holds steady to firm. Demand for blast furnace scrap has shown no signs of easing, prices having remained at present levels for a month or six weeks.

Birmingham, Ala., March 19.—Improved conditions are noted in the iron and steel scrap market. Select heavy melting steel is still $12.50, while one of the larger consumers is paying $10.50.

Toronto, Ont., March 19.—New business in iron and steel scrap is developing. While some forward delivery booking is reported, most buying is for immediate needs. External trade in iron and steel scrap is on the upgrade, with importations at about double the tonnages exported.

Semifinished Steel

Consumption Continues at High Level —Material Still Scarce

SEMIFINISHED STEEL PRICES, PAGE 804

Pittsburgh, March 19.—Activity in semifinished continues restricted because of scarcity. Consumers have been active, however, in closing out first quarter contracts, and consumption is well maintained. A number of users still are encountering trouble obtaining sufficient steel to supply their finishing mills, but producers are not anxious to solicit business. Some contracts have been made with regular customers for second quarter on which new prices of $35 for sheet bars and $34 for 4 x 4-inch rerolling billets and slabs are regularly quoted. Wire rods are active and firm at $42, and forging billets are holding at $39. Skelp lacks the activity of other semifinished products, but on current business 1.90c to 1.95c, Pittsburgh, generally is observed.

Chicago, March 19.—Little semifinished steel is available in the open market. The present tight situation is affecting operations in some of the finishing mills, notably hot strip and sheet mill operations. Prices are unchanged at $35, Chicago, for commercial, or rerolling billets, 4 x 4-inch base, and sheet bars. Sales of wire rods are reported on the basis of $43, Chicago.

Youngstown, O., March 19.—Recent renewal of contracts with local mills for skelp has brought out that the price for second quarter is 1.90c, Pittsburgh. The supply of billets and sheet bars available for nonintegrated mills continues restricted sharply, outside mills being drawn upon to supply the deficiency here. Billets and slabs hold at $34, Pittsburgh and Youngstown, while sheet bars bring $35, same bases; and wire rods $42, Pittsburgh and Cleveland.

Cleveland, March 19.—Demands for sheet bars, billets and slabs have become more urgent than at any time since scarcity of supplies was first noted. The leading local producer continues operating all of its 14 open hearths. Prices are firm.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Tons

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	14.00
Iron axles	16.00
Heavy melting steel	9.50
Turnings	7.00
No. 1 mach. cast (net)	15.00
Malleable (net)	13.00

Pig Iron

(*Concluded from Page* 805)

better position. Many larger buyers have covered for second quarter, and tonnages now being closed are fill-in and supplemental orders. Buyers are watching the cargo iron situation. While realizing that conditions do not appear favorable now for lake shipments this season, the situation is believed to be a potential market influence in the Chicago-Milwaukee territory. The present market is re- for the base grades in spot and future sales.

Southern iron is being quoted here at $15.50, base, Birmingham, with the all-rail freight $6.01 to Chicago and other Illinois points. This price may have an effect in the St. Louis market, but is not expected to influence the Chicago-Milwaukee district. Sales of malleable iron are active, with foundries working overtime. Several lots of 2000 to 3500 tons are noted. The Allis-Chalmers Mfg. Co. is inquiring for 3000 to 4000 tons of northern iron.

St. Louis, March 19.—Demand for pig iron is active and diversified. Melters are covering full second quarter requirements. Consumption is estimated to be the highest in several years. The leading local producer booked 9000 tons. The largest single lot was 4000 tons sold to a radiator manufacturer for its Illinois plants, to be delivered through second quarter. Prices are firm.

Birmingham, Ala., March 19.—Melters of pig iron are indicating requirements for second quarter equal to those of the past three months. Delivery of iron is being pushed to complete first quarter contracts. March production is expected to exceed that of January. Two blast furnaces are likely to show records for the month. Sales have been reported at $15.50, base, Birmingham, or $1 under the recent market. Quotations now are $15.50 to $16.50.

Toronto, Ont., March 19.—General business in the Canadian pig iron market continues strong. Several large contracts were closed during the week. Spot sales are holding at their former high level. Prices are firm.

Philadelphia, March 19.—Pig iron sales in the past week were the heaviest for some months. Several consumers closed for a total of about 25,000 tons of basic. This grade now is $20.25 to $20.50, delivered in this territory. A pipemaker bought 20,000 to 30,000 tons of foundry iron. Other sales were restricted to small and moderate lots. Eastern Pennsylvania foundry iron is firmer at $21, base, furnace.

The Standard Sanitary Mfg. Co. has closed on 3000 to 4000 tons of foundry iron for its Baltimore plant. The Kennedy Foundry Co., Baltimore, is inquiring for 250 tons of malleable and 150 tons of foundry.

Bars

Second Quarter Price More Widely Applied as First Quarter Specifications Come to End

CONSUMERS of steel bars have completed specifications on first quarter contracts, mills giving some concessions on tonnage, allowing overspecification in some instances. Deliveries are still delayed on most sections. Advanced prices are being held by producers and present backlogs aid in resisting lower price efforts. Second quarter contracts are being signed.

BAR PRICES, PAGE 803

Chicago, March 19.—Bar mills, which have been operating at capacity for many weeks, reflect the steady rate of demand for finished steel products. Finishing mills report the week just closed was the second largest this year in specifications. The March 15 deadline for specifications on first quarter contracts has been waived by producers for buyers whose manufacturing schedules and inventory policies are such that inconvenience would result. Farm implement activity is unabated on the whole. The spring runs are merging into harvesting machinery schedules. Tractor plants in the West have heavy schedules for the remainder of the year, it is stated.

Soft steel bars are reported steady at 2.05c to 2.15c, Chicago. Second quarter contracting is proceeding on that basis, with the customary differentials for tonnages of desired rollings.

New York, March 19.—Mills generally have wound up specifications against first quarter steel bar contracts, the final date of March 15 having been observed in most cases. A liberal policy was followed and consumers were permitted to overspecify to some extent, so that mills probably will be shipping against first quarter contracts during most of April. With the first quarter business now out of the way, the new prices are in effect, and all indications point to the fact that the new level is regarded as firm by both producers and consumers. A good many buyers have signed up their second quarter contracts at prices which are $1 a ton higher than the first quarter prices. Large tonnage buyers are on the basis of 1.95c, base, Pittsburgh, with a good many consumers on the basis of 2.00c, and a few also on the 2.05c basis.

Pittsburgh, March 19.—Second quarter contracting for hot-rolled merchant bars is more active with the expiration of first quarter contracts March 15. Mills profess to be adhering to the new 1.95c price and believe current backlogs and demand sufficient to support the advance. First quarter contracts were fully specified in most instances although mills believe little business now on the books is for anything but current requirements. Deliveries still extend three to four weeks on most sizes although improvement can be effected on certain sizes while on others a still longer period is required. Practically all mills are operating full. Refined iron bars are in fair demand at 2.75c to 4.25c, Pittsburgh.

Cleveland, March 19.—Many customers of outside merchant bar mills now are under contract for second quarter at the 1.95c, Pittsburgh, figure, $1 higher than in the first quarter. These mills are quoting 2.00c, delivered Cleveland, at freight points where they have been able to compete with the 1.95c, Cleveland base, quotation of local mills. Specifications against first quarter contracts have been liberal notwithstanding the fact that producers are not insisting on the strict observance of the March 15 deadline.

Philadelphia, March 19.—Steel bar specifications on mill books are heavy and will take care of a large portion of customers' second quarter requirements. In most cases March 15 was the final date for specifying against first quarter contracts. Considerable second quarter contracting already has been done, mostly at 1.95c and 2.00c, base, Pittsburgh, with some at 2.05c.

Elect Standart Chairman

H. W. Standart, Northern Engineering works, Detroit, was elected chairman of the Hoist Manufacturers association at the annual meeting held in New York, March 14. J. G. Worker, American Engineering Co., Philadelphia, was made vice chairman. The next meeting of the association will be held in New York, May 16.

Plates

Market Active—Some Users Contracting for Second Quarter at New Prices

PLATE business continues active. While mills in the Chicago district are operating at capacity, deliveries have been deferred as long as 12 weeks for some sizes. More than 16,000 tons were placed in that district in the past week, for refinery works and tanks. Specifications from railroad equipment, barge and ship builders are increasing.

PLATE PRICES, PAGE 803

Chicago, March 19.—Heavy tankage and pipe line work is before plate mills. Even with capacity plate mill operations in this district, deliveries are being extended to as much as 12 weeks for some sizes and sections. The 100,000 tons for a gas line from Louisiana to St. Louis still is pending. Tank plates for oil storage work in the South took 8000 tons in three separate lots during the week. About 8000 tons has been awarded as the first unit of the Empire Oil & Refining Co. refinery works at East Chicago, Ind. About 8000 tons more is to be placed. Magnolia Petroleum Co. has awarded 800 tons for storage work in West Texas. New inquiry for tank plates for the oil country has subsided. It is understood the Humble Oil & Refining Co.'s program will not go ahead. Car specifications have not attained their maximum and this fact tends to relieve the tight delivery situation. Second quarter contracting is reported active on the basis of 2.05c to 2.15c, Chicago. Concessions below this range for tonnage orders and to preferred industries are proportionately higher as a result of the reported firm second quarter quotations.

Pittsburgh, March 19.—Plate specifications are more active with increased requirements noted for railroad equipment builders, barge and shipbuilding. Some of recent buying, however, is thought to have been in anticipation of the higher prices in effect following the expiration of first quarter contracts March 15. Such buying, however, was at a minimum. New contracting still is slow to get under way, with the new 1.95c price lacking on adequate test.

Cleveland, March 19.—Although large lots of plates are lacking in orders or inquiries, aggregate bookings are fair. Specifications against first quarter contracts are well sustained. Mills continue to accept specifications against first quarter contracts at 1.90c, Pittsburgh, notwithstanding the fact that March 15 was to be the expiration date. New contracts are being written almost daily at the new and higher figure, 1.95c, Pittsburgh.

Philadelphia, March 19.—Plate consumption continues active, comprised mainly of small and moderate tonnages for prompt shipment. Mills generally are asking 2.05c to 2.15c, base, Coatesville, on new business, but 2.00c has not disappeared as a market

factor. Consumers are given to understand they will have to pay $1 a ton more in the second quarter.

CONTRACTS PLACED

8000 tons, tank plates for oil storage work in South for three unstated interests.
8000 tons, first unit of Empire Oil & Refining Co. refinery works, East Chicago, Ind., to Chicago Bridge & Iron Co. and Graver Corp.
6000 tons, 20-inch steel pipe line, Pacific Gas & Electric Co., San Francisco, to Western Pipe & Steel Co.
2000 tons, five 134,000-barrel tanks, Rio Grande Oil Co., Los Angeles, to Western Pipe & Steel Co.
1700 tons, three coast guard cutters, San Francisco, to General Engineering & Drydock Co.
1400 tons plates and shapes for 11 coal barges for Wheeling Steel Corp., to Riter-Conley Co.
1200 tons, oil storage tanks, Richfield Oil Co., Los Angeles, to Western Pipe & Steel Co.
800 tons, oil storage tank plates for Magnolia Petroleum Co., Galveston, Tex., to United Iron Works.
200 tons, tanks for Southern Pacific Co., San Francisco to Western Pipe & Steel Co.

CONTRACTS PENDING

13,200 tons, two ships for Matson Navigation Co., San Francisco; bids opened.
1691 tons, siphon at Ellensburg, Wash., for Yakima, project. Commercial Boiler Works, Seattle, low bidder.
1600 tons, plates and shapes, 10 coal barges for Island Creek Coal Co., Huntington, W. Va.; specifications revised from previous inquiry.
180 tons, lock No. 8 Allegheny river, United States engineers, Pittsburgh district; open for bids.

Iron Ore

Sellers Asking More for Lake Superior Iron Ore—Market Not Yet Opened

IRON ORE PRICES, PAGE 804

Cleveland, March 19.—An advance of 25 cents a ton in the price of Lake Superior iron ore has become the pivot of discussion between some producers and consumers, although prices have not been definitely established. Some companies have not submitted prices on the Ford Motor Co.'s inquiry for 354,000 tons, but they expect to do so, and say the market may be opened next week. While general stocks on hand at lower lake ports and furnaces are below normal for this time, as shown by recently published statistics, it develops that there is a scarcity of certain grades. Leading steelworks indicate they will require larger tonnages in 1929 than in 1928.

Manganese Ore Is Lower

New York, March 19.—Lower prices have appeared on Brazilian and Indian manganese ore. The reason appears to be that consumers are well covered. The current range of prices on Brazilian and Indian high grade manganese ore is 34 to 36 cents per unit, c.i.f. tidewater. The market on Caucasian manganese ore is unchanged and the washed grade of this ore continues 36 to 38 cents, per unit, c.i.f. tidewater.

Pipe

Municipal Projects Increase as Weather Opens Up—Steel Pipe Demand Better—Prices Steady

MUNICIPALITIES requiring lots of cast pipe between 100 and 2600 tons are becoming active. French makers still are aggressive, underbidding domestic makers by about $2 a ton. Standard Oil of Kansas buys 2500 tons of steel pipe at Pittsburgh, where a 19,000-ton inquiry for Texas is pending. Prices, especially on cast, are steady in most sections.

PIPE PRICES, PAGE 804

Chicago, March 19.—Numerous pipe projects are being figured. Roseville, Mich., took bids yesterday, on its third letting this year, for 1420 tons of 6 and 8-inch cast iron pressure pipe. Pontiac, Mich., will close soon on 2600 tons of 6 to 16-inch pipe. French pipe sellers bid about $2 under the lowest domestic bid on the latter project. Holland, Mich., is in the market for 180 tons of 12-inch pipe, and De Kalb, Ill., for about 200 tons of odd sizes for sewage treatment works. St. Paul is closing on 1300 tons of 6 to 20-inch pipe. Some private inquiry has come out during the week from gas companies. A few railroad orders have been placed. Carlot prices are reported steady on the basis of $37 to $38, base Birmingham.

New York, March 19.—An inquiry is out for 12,000 tons of 6 to 20-inch cast pipe for the local water department. Municipal inquiries are few and private demand is spotty.

Pittsburgh, March 19.—A fair volume of business in line pipe still is pending. The largest individual item is the line from Louisiana to St. Louis, which involves about 150,000 tons. The United Gas Co. is inquiring for 110 miles of 16-inch, about 19,000 tons. The movement to restrict oil drilling activities in the west is finding some reflection in demand for casing material, and although seamless pipe still is in fair demand, welded material is slow. Activity in merchant pipe also has failed to expand materially. Producers of mechanical tubing and locomotive tubes, however, report continuation of recent steady buying.

Buffalo, March 19.—The Pennsylvania Gas Co. will lay about 20 miles of new gas mains in the Erie, Pa., suburban district this spring. The mains will be of various size.

Cleveland, March 19.—Plumbers' supply jobbers are commencing to line up their stocks, getting ready for increased spring demands. Orders for a carload or two of buttweld pipe at a time are more numerous. Mixed carloads of lapweld likewise are coming through more freely than during the winter. Nothing has been heard here as yet regarding the placing of a large order by the Hope Engineering Co. for a line in Montana.

Birmingham, Ala., March 19.—Production and shipment of cast iron pressure pipe are steady, with slight improvement reported by some manufacturers. Shipments mainly are for the Far West.

CONTRACTS PLACED

CAST PIPE

9000 tons of gas pipe, United Gas Improvement Corp., Philadelphia, reported placed, one third going to McWane Cast Iron Pipe Co. and remainder to Herbert Kennedy, representing French makers.
1079 tons, 8-inch class 150, Los Angeles, allocated as follows: 526 tons to American Cast Iron Pipe Co., 371 tons to Pacific States Cast Iron Pipe Co., and 182 tons to National Cast Iron Pipe Co.
664 tons, 4 to 16-inch class B and class 250 pipe, Glendale, Calif., allocated as follows: 392 tons to American Cast Iron Pipe Co.; 188 tons to C. G. Claussen & Co. Inc.; and 84 tons to National Cast Iron Pipe Co.
600 tons, Vancouver, Wash., to American Cast Iron Pipe Co.
300 tons, 6 and 8-inch pipe for Arlington Heights, Ill., awarded through contractor, to unstated interest.
200 tons, Mount Vernon, Wash., to American Cast Iron Pipe Co.
100 tons of 4 to 16-inch class C water pipe, Neenah, Wis., closes bids March 22.

STEEL PIPE

2500 tons, 50 miles of 6-inch pipe for Standard Oil Co. of Kansas, to a Pittsburgh mill, for Kansas oil field installation.

CONTRACTS PENDING

CAST PIPE

12,000 tons, 6 to 20-inch cast pipe, mostly 8-inch, for department of water supply, gas and electricity, New York; bids opened March 25.
2600 tons, 6 to 16-inch pipe for Pontiac, Mich.; French pipe sellers low on the basis of $34.30, base Birmingham. Of domestic bidders, James B. Clow & Sons are low at $36.30.
2173 tons, 4 to 24-inch class B, improvement South Fifty-sixth street, Tacoma, Wash., to Paine & Galucci Inc.
2000 to 5000 tons, 4 to 16-inch gas and water pipe for Interstate Equipment Co., New York.
1420 tons, 6 and 8-inch class C pipe for Roseville, Mich.; bids March 18.
1300 tons, 6, 8, 12 and 16-inch centrifugal pipe for St. Paul; United States Cast Iron Pipe & Foundry Co. low bidder.
200 tons, odd sizes of cast pipe and fittings for sewage disposal works, DeKalb, Ill.; bids March 20.
165 tons, 4 and 6-inch class B, Whittier, Calif.; bids March 18.
150 ton, class B in aggregate for Troy, N. Y., and Bridgewater, Mass.
120 tons, 6-inch class B, Astoria, Oreg.; bids opened.
Unstated tonnage but large, water pipe for Syracuse, N. Y. Specifications being issued.
Unstated tonnage, cast pipe and fittings, Albany, N. Y., bids April 1.
Unstated but small tonnage for Bridgeport Hy-

draulic Co., Bridgeport, Conn., specifications shortly.

STEEL PIPE

19,000 tons, 110 miles of 16-inch pipe line for United Gas Co. for a line from Refugio to San Antonio and Austin, Tex.

Tin Plate

Demand Increasing—Operations Raised to 90 Per Cent

TIN PLATE PRICES, PAGE 803

Pittsburgh, March 19.—Increased specifications for tin plate have served to increase operations of mills in this district, and the average now is close to 90 per cent compared with 85 per cent earlier this month. Canmakers' requirements are growing and an upward trend in mill operations is looked for until the peak of the spring buying movement. Mills look for a good demand from leading consumers during the year. Tin plate continues $5.35 per 100-pound base box, Pittsburgh.

Bolts, Nuts, Rivets

Second Quarter Contracting Well Started—Specifications Heavy

NUT AND BOLT PRICES, PAGE 804

New York, March 19.—Bolt and nut makers report a substantial increase in demand for their product. Current specifications are considerably above the February average daily rate. Makers construe this improvement as based entirely on consumption, inasmuch as there is no increase in price for second quarter and no reason for building up stocks. An interesting order involves about 75 tons of heat-treated bolts, placed by the John A. Roebling's Sons Co. with the Bethlehem Steel Co. These bolts, 2⅞ x 27 inches, 3400 pieces in all, are to be used for the cable bands for the Hudson river bridge.

Pittsburgh, March 19.—Bolt, nut and rivet producers are receiving contracts for second quarter, although this activity just is getting under way. The new 3.10c, Pittsburgh, price on large rivets has not been fully tested. The advance has served to increase specifications against first quarter 2.90c contracts. Bolts and nuts are unchanged at 60 to 70 off.

Cleveland, March 19.—Progress has been made in booking nuts, bolts and rivets for second quarter. The former are unchanged at 70 off. Rivet contracting is getting under way slowly as buyers find sellers firm for the $4 advance, with 3.10c quoted generally.

Chicago, March 19.—Specifications for bolts, nuts and rivets show no marked gain but remain at about the February rate. Sellers report large structural rivets well established now at 3.20c, Chicago. Resistance to this quotation has been negligible. Farm implement orders and billings continue steady. Bolts and nuts are 60 to 70 off.

Sheets

Seasonal Demands Increase Market Activity—Railroad Equipment Builders More Active

SHEET demands continue heavy. While the automotive industry still is taking large tonnages, railroad equipment builders have become important factors, and open weather in many sections of the country has stimulated sales for general construction. Closing of first quarter contracts has brought out a flood of specifications. Contracting at the new prices is in fair volume.

SHEET PRICES, PAGE 803

Pittsburgh, March 19.—Closing out of first quarter contracts brought a flood of specifications for steel sheets to mills. Included in the recent heavy tonnage, however, was considerable material for immediate requirements and total volume of anticipatory buying was comparatively small. Increased requirements of railroad equipment builders has served to bring that industry up to a comparable basis with other important consuming lines. A number of large consumers now are covered for several weeks ahead. Although considerable new business and contracts have been placed at the advanced prices, second quarter contracts will not receive an adequate test until next month. Mills are receiving some pressure on prices from automotive interests but so far the new levels have been well maintained. These prices are 2.95c, base, Pittsburgh, for sheet mill black, 3.70c for galvanized and 2.20c for blue annealed. Tin mill black and autobody sheets continue at 3.00c and 4.10c, respectively. Mill operations continue as close to capacity as mechanically possible. The recent increase in specifications has served to prevent any decrease in backlogs. Deferred deliveries consequently continue the rule, particularly for autobody material. Automotive interests still are active buyers and indicate from their purchases that heavy operations in the industry will be maintained for at least six weeks ahead.

Buffalo, March 19.—Demand for sheets, particularly the automobile body grade, continues excellent. Sales of the latter are being made for July delivery. The price is 4.365c, base, Buffalo. District steel works producing sheets are operating at considerably better than 90 per cent.

Youngstown, O., March 19.—Sheetmakers here are beginning to specify that deliveries shall be at mills' convenience. Duplication of orders on mill books today are scouted by local mill managers, although they admit this might have been the case to some extent around the middle of February. Now they declare such duplication is impossible generally since today's orders on books are specific tonnages for definite purposes. Quotations with local mills are firm at 2.95c, base, Pittsburgh, for common black, 3.70c for galvanized, 4.10c for autobody and 2.20c for blue annealed. Some disposition is being shown by consumers of strip steel to return to splitting sheets for their own use due to the scarcity of strip supplies.

Chicago, March 19.—Sheet mill operations in the Chicago district are steady at about 85 per cent. The need for diversion of ingots to other departments has tended to affect sheet mill operations. One group of hot mills has been forced to cut operations to a five-day weekly basis. Buying is showing a moderate increase with the more open weather in many sections of the West and Southwest. Shipments are extended as far as four to five weeks and give indication of further lengthening. Buyers are specifying more heavily in individual orders. Sheet prices are on the basis of 3.10c, delivered Chicago, for No. 24 black, 3.85c for No. 24 galvanized, and 2.35c for No. 10 blue annealed.

St. Louis, March 19.—A slightly better tone is noted in demand for galvanized sheets. Shipments are heavy, but specifications and new orders exceed the shipment total in this district. Prices are firm.

Cleveland, March 19.—All sheet buyers appear keen to obtain more tonnage. They are furnishing schedules four and six, and in some cases, eight weeks in advance. This applies to full finished, deep drawing and extra deep drawing stock, some metal furniture, electrical and a few other grades. Common finishes are available in four weeks or less, in a few instances. Prices are firm. Second quarter contracting is well along.

Philadelphia, March 19.—Sheet millls are approaching the end of the quarter with heavy tonnages on books. In some instances these are sufficient to care for consumers' requirements through second quarter. Mills have accepted orders for July shipment, but regular third quarter prices will apply. On the other hand, most mills have shorter schedules, and some even need tonnage occasionally to fill in early rollings. Consumption continues active. Consumers and jobbers show a disposition to accept the recent price advances, though they will not be paid in most instances until first quarter tonnage has been delivered.

In 1845 the first successful plant for the utilization of chromite was established near Baltimore. The product was potassium bichromate.

Structural Shapes

Several Large Jobs Let in Milwaukee, Chicago, New York—Subway Work Pending Involves Large Tonnage—Prices Firm

FURTHER progress is made this week in structural awards in catching up on 1928's greater tonnage placed to date. Of aid in this direction is the 13,350-ton award of a court house at Milwaukee, a 2500-ton mill building at Chicago, several buildings at New York, taking between 1000 and 7000 tons apiece, and 2000 tons of subway work there. Outstanding among the pending items are several lots for subway work in the East, totaling 81,200 tons. Several buildings on which early action is promised, take up to 5000 tons apiece, both east and west. Mills report the specifying rate holds up well. The new 1.95c, Pittsburgh price finds substantiation in several contracts. Time is being extended for first quarter specifications due March 15.

STRUCTURAL SHAPE PRICES, PAGE 803

Chicago, March 19.—Buyers report tighter deliveries in structural steel. This is a change in the picture of the past several weeks. Deliveries while still easier in plain structural material than in plates and bars, are lengthening even further than four weeks. Despite the falling off in building for the country, projects in Illinois, Indiana, Michigan, Iowa and Wisconsin are holding up close to a year ago. Mill customers among manufacturing consumers, whose operating schedules might suffer if they were held strictly to the March 15 limit for first quarter specifications, are being allowed more time. Second quarter contracting is proceeding on the basis of 2.05c to 2.15c, Chicago, with differentials for tonnage orders. The 12,350-ton court house at Milwaukee went to McClintic-Marshall Co.

New York, March 19.—Additional specifications have brought the total subway structural tonnage now actively pending up to 81,200 tons. Miscellaneous building construction continues active, although some of the larger orders scheduled for early action, continue pending. Fabricators are confident that heavy tonnage will be closed before April and some believe that the March total for building construction will approach if not exceed the aggregate for the preceding two months combined. The price tendency is strong.

Pittsburgh, March 19.—Mills report a fairly steady demand for plain structural material but new work is slow to materialize. Awards in this district since March 1 have been disappointing and both January and February were slow periods. Second quarter contracting for plain material is slow, and the new 1.95c price as yet has not been fully tested. Most consumers took full quotas on their first quarter contracts. Fabricators are fairly well engaged on a number of small jobs but both backlogs and new work are small.

Cleveland, March 19.—Prospective building work looms importantly, although local lettings recently have been few. Small jobs taking less than 100 tons at a time are numerous but delays in financing and in connection with civic work interfere. Mills report a fair specifying rate, many customers having taken out all first quarter tonnage. They continue to accept tonnage on unexpired contracts, although March 15 is now four days past. Contracts for second quarter at 1.95c, Pittsburgh, are gradually being written. The Goodyear Tire & Rubber Co., Akron, O., has placed another building at Gadsden, Ala., with the McClintic-Mashall Co., taking 500 tons.

Philadelphia, March 19.—Eastern shape mills continue to book good business and are operating at 70 to 80 per cent. Shape prices are unchanged, the usual range being 1.90c to 2.00c, base mills, with lower prices named on attractive tonnages.

Awards Compared

	Tons
Awards this week	**48,069**
Awards last week	**33,471**
Awards two weeks ago	**55,933**
Awards this week in 1928	**19,350**
Average weekly awards, Feb.	**33,361**
Average weekly awards, 1928	**39,082**
Average weekly awards, 1929	**36,569**
Total awards to date, 1928	**519,541**
Total awards to date, 1929	**438,832**

CONTRACTS PLACED

12,350 tons, courthouse at Milwaukee, to McClintic-Marshall Co., on its bid of $786,900 for fabricating, assembling and delivery. Bids on erection close March 29.

7000 tons, Dowling building, Broadway, New York, to American Bridge Co.

3600 tons, office and bank building, Alamo National bank, San Antonio, Tex., to Petroleum Iron Works. Reported last week as 1300 tons to Alamo Structural Steel Co.

2850 tons, building addition, *New York Herald Tribune*, Forty-first street, New York, to Shoemaker Bridge Co.

2500 tons, 10-inch merchant mill building, Interstate Iron & Steel Co., South Chicago, Ill., to McClintic-Marshall Co.

2300 tons, 26-story office building, Realty Construction Co., Broadway and Walker street, New York, to Dreier Iron Works.

2000 tons, car shops, Rio De Janerio, Brazil, to United States Steel Products Co., through United Engineers & Constructors for the Dwight P. Robinson Co., of Brazil.

2000 tons, approximately, subway section 2, route 108, New York, to American Bridge Co.

1900 tons, Young Men's Hebrew association building, New York, to Paterson Bridge Co.

1100 tons, bridges, Chesapeake & Ohio railroad, to Bethlehem Steel Co.

820 tons, mill building, Steinite Mfg. Co., Ft. Wayne, Ind., to Rochester Bridge Co.

800 tons, three coast guard cutters, San Francisco, to General Engineering & Drydock Co.

710 tons, apartment, Green & Leavenworth streets, San Francisco, to Judson-Pacific Co.

700 tons, bridge, Chesapeake & Ohio, Cincinnati, to Mt. Vernon Bridge Works.

600 tons, power house, El Paso, Tex., awarded through Stone & Webster to Virginia Bridge & Iron Co.

600 tons, Von Steuben school, Chicago, to Reuter Bros.

549 tons, warehouse, New York City, to unstated interest.

500 tons, reclamation plant, Goodyear Tire & Rubber Co., Gadsden, Ala., to McClintic-Marshall Co.

500 tons, Memorial hospital, Yale university, New Haven, Conn., to Levering & Garrigues Co.

370 tons, two apartments, Eddy and Octavia streets, San Francisco, to McClintic-Marshall Co.

350 tons, building, General Baking Co., Worcester, Mass., to Eastern Bridge & Structural Co.

300 tons, building, Franklin Potteries Co., Lansdale, Pa., to Frank Weaver Co.

300 tons, highway bridge work in Wisconsin, to unstated fabricator.

280 tons, civic auditorium, La Porte, Ind., to Rochester Bridge Co., through Maurice Fox.

250 tons, building, University Club of Toronto, Toronto, Ont., to John T. Hepburn, Ltd.

250 tons, state highway bridge, Union township, New Jersey, to unnamed fabricator.

240 tons, New Jersey state highway bridge, Newark, N. J., to Phoenix Bridge Co.

225 tons, steel joists for Samson Tire & Rubber Co., plant, Los Angeles, to Consolidated Steel Corp.

210 tons, school building, Bridgeport, O., to J. E. Moss Iron Works, through Carl W. Shimp.

210 tons, extensions to open-hearth building, Indiana Harbor, Ind., Youngstown Sheet & Tube Co., to McClintic-Marshall Co.

206 tons, building, General Electric Co., Philadelphia, to Bethlehem Construction Co.

200 tons, apartment, O'Farrell and Franklin streets, San Francisco to Golden Gate Iron Works.

200 tons, building, Lynn Gas & Electric Co., Lynn, Mass., placed through Stone & Webster with Eastern Bridge & Structural Co.

200 tons, airplane plant, Curtiss-Reid Aircraft Co., St. Laurent, Que., to Canadian Vickers Ltd.

198 tons, girder span bridge, Hocking Valley railroad, Delaware, O., to Mt. Vernon Bridge Co.

175 tons, addition, Davenport hotel, Spokane, Wash., to Minneapolis Steel & Machinery Co.

174 tons, New Jersey state highway bridge, Essex county, to McClintic-Marshall Co.

160 tons, mill building, Wheeling Steel Corp., Portsmouth, O., to J. E. Moss Iron Works.

150 tons, addition, Mercantile Trust Co., St. Louis, to Stupp Bros. Bridge & Iron Co.

150 tons, building, Miller Lithographing Co. Ltd., Toronto, Ont., to Disher Steel Construction Co. Ltd.

150 tons, garage, York, Pa., to McClintic-Marshall Co.

150 tons, sand storage building, Farmall tractor works, International Harvester Co., Rock Island, Ill., to McClintic-Marshall Co.

147 tons, garage building, Thos. Shipley Inc., York, Pa., to McClintic-Marshall Co.

140 tons, United States post offices at Anderson, Ind., and Pontiac, Mich., to Rochester Bridge Co.
105 tons, Malheur river bridge, Portland, Oreg., to unnamed interest.
100 tons, addition, Dominion Forge & Stamping Co., Walkerville, Ont., to Canadian Bridge Co.
100 tons, building, American Electric Metal Corp., Lewiston, Me., to American Bridge Co.
100 tons, Fort Bayou bridge, Ocean Springs, Miss., to Nashville Bridge Co.
100 tons, warehouse, First and Market streets, Oakland, Calif., to Moore Drydock Co.
100 tons, grand stand, State fair grounds, Puyallup, Wash., to Isaacson Iron Works.
Unstated tonnage, school, No. 226, New York, to an independent fabricator.

CONTRACTS PENDING

22,000 tons, first section, west side elevated roadway, New York, specifications expected to be issued through office of the president of Manhattan borough within 10 days.
16,000 tons, subway, sections 3 and 4, route 108, Queens, New York, specifications issue; was noted in last week's issue as contemplated; bids also will be taken on these two sections separately.
15,000 tons, office building, Ohrstrom banking interests, 36 Wall street, New York. Specifications out shortly.
8200 tons, subway section 7, route 109, Brooklyn, Hart & Early Co. Inc., low on general contract, with bid of $3,957,198.
8000 tons, subway section 6, route 107, New York; bids asked. Through typographical error this was reported last week as involving 800 tons.
7000 to 8000 tons, office building, American Sugar Refinery, 114 Wall street, New York. Plans nearing completion.
6800 tons, two ships for Matson Navigation Co., San Francisco. Bids opened.
5000 tons, H. I. Oser loft, 305 East Forty-fifth street, New York.
2500 tons, cable plant for Western Electric Co., Chicago; revised.
1505 tons, West Spokane Street bridge, Seattle. General contract to General Construction Co. Steel not yet placed.
1400 tons, two junior high schools, Chicago. Bids April 2.
1200 tons, University club, Philadelphia.
850 tons, woman's hotel, 228 East Fifty-sixth street, New York, Joseph Siegel, builder. and Sugerman & Berger, architects; was previously noted as contemplated.
800 tons, plant addition, W. F. Hall Printing Co., Chicago.
800 tons, 20-story loft building, Levy Bros., Thirty-fourth street and Seventh avenue, New York.
800 to 900 tons, school, Toledo, O. Bids in.
500 tons, 12-stall round house, garage building, turn table, platform, power house addition, etc., Big Four railroad, Linndale yards, Cleveland. General contract to Wellington-Miller Co., Chicago.
500 tons, general hospital, Portland, Me.
500 tons, state highway bridge in Virginia.
500 tons, Pennsylvania railroad bridges.
475 tons, loft, Hudson and Franklin street, New York.
400 tons, 10-story apartment, Remson and Hicks streets, Brooklyn, N. Y.
400 tons, bridge, Providence, R. I. Board of contract and supply to open bids April 8.
275 tons, 3-story garage, 380 Gold street, Brooklyn, N. Y.
250 tons and 150 tons of castings, government locks and dam at Louisville, Ky.
227 tons, bridge, Nickel Plate railroad, East 105th street, Cleveland. Bids in.
225 tons, Mad River bridge, Sacramento, Calif. Bids opened.
225 tons, 4-story private hospital, Bronx, N. Y.
200 tons, warehouse No. 4, Nickel Plate railroad, Cleveland. Bids close March 21.
200 tons, state bridge, Monmouth county, N. J.
200 tons, apartment, Pine and Monrie streets, San Francisco. Bids being taken.
150 tons, Hebrew orphan asylum, 225th street, New York.
100 tons, branch, Guardian Savings & Trust Co., Rocky River, O. Bids asked. Walker & Weeks, architects.
100 tons, branch, Union Trust Co., East 185th street, Cleveland. Bids asked.
Unstated tonnage, St. Charles hospital, Port Jefferson, N. Y. Frank J. Berlendach, New York, architect.
Tonnage unstated, third unit, Nippon Electric Co., Tokio, Japan, general contract to H. K. Ferguson Co., Cleveland.

Concrete Bars

Prices Unsettled in Chicago —Strong in East—New York Subways Take Large Lots

PRICE advances in concrete bars in New York and Pittsburgh afford a contrast to the situation in Chicago, where weakness prevails in both billet and rail steel bars. Large lots placed and pending in Chicago and New York make up for numerous small lots at Pittsburgh, Cleveland, Buffalo and elsewhere. Better weather brings out more inquiries.

REINFORCING BAR PRICES, PAGE 803

New York, March 19.—Prices on concrete reinforcing bars have been advanced $1 a ton. Sellers now are asking 2.05c, base, Pittsburgh, on mill lengths and 2.30c, base, Pittsburgh, on bars cut to length. These prices apply to shipments at mill convenience. Warehouse prices here also have been marked up $1. The price on New York stocks now is 3.30c, base, delivered locally, for small lots, and down to 2.90c, base, delivered locally, for carload quantities. Tonnage for subway construction is a big factor in the concrete reinforcing bar market here. Some lots have been placed and additional ones are coming along. The price advance is automatically causing the closing of considerable business. In many cases, protections at the old prices have been extended until the end of March, so that undoubtedly a large aggregate will be placed before the month ends.

Philadelphia, March 19.—Concrete bar sellers now are quoting $1 per ton higher on all prices, but have extended protections at old figures to the end of the month.

Pittsburgh, March 19.—Following expiration of first quarter contracts for concrete reinforcing bars on March 15, mills have advanced $1 a ton in line with the increase on hot rolled merchant bars. This brings new prices to 2.30c, Pittsburgh, for cut lengths and 2.05c for stock lengths. Specifications to mills are slightly more active and distributors are showing a tendency to accumulate stocks in preparation for more active spring demand. Building operations are slow to expand in this district. Both awards and inquiries hold to small lots.

Buffalo, March 19.—Large inquiries are pending for reinforcing bars but sales involve less than 100 tons. Producers expect a heavy disposition next quarter and are preparing to increase operating schedules accordingly. Small lots are being sold at 2.515c at Buffalo warehouses.

Chicago, March 19.—Both billet and rail steel reinforcing bar prices are unsteady. The 2.35c price for billet bars and the 2.05c quotation for rail steel bars in lots of 100 tons and over have been shaded in recent building awards. Competition is sharp on jobs where the two varieties compete. Indications now are that building work in the Chicago area may increase shortly. Some unusually large individual awards are noted. The 1100 tons for the Damen avenue bridge, Chicago, has been closed. A fair tonnage will be required for the De Kalb, Ill., sewage treatment works.

Awards Compared

	Tons
Awards this week	6,930
Awards last week	7,347
Awards two weeks ago	6,550
Awards this week in 1928	5,880
Average weekly awards, Feb.	4,716
Average weekly awards, 1928	6,189
Average weekly awards, 1929	6,344
Total awards to date, 1928	73,535
Total awards to date, 1929	76,130

CONTRACTS PLACED

1100 tons, Damen avenue bridge, Chicago, to unstated interest.
800 tons, grain elevator, Pillsbury Milling Co., Wichita, Kans., to Sheffield Steel Corp.
600 tons, store at Minneapolis for Sears, Roebuck & Co., Chicago, to unstated interest.
500 tons, office building, Wilshire boulevard, Los Angeles, to unstated company.
400 tons, Illinois road work, to Calumet Steel Co.
400 tons, building, Rundle Mfg. Co., Camden, N. J., to Taylor, Davis Inc.
400 tons, apartment, 561 North Rossmore avenue, Los Angeles, to unstated company.
380 tons, office building, Santa Monica, Calif., to unstated company.
350 tons for subway section 2, route 108, Borough of Queens, New York, to Concrete Steel Co., through J. F. Cogan.
300 tons, apartment, Oakdale and Commonwealth avenue, Chicago, to Concrete Steel Co.
300 tons, furniture warehouse building, Chicago, to Inland Steel Co.
300 tons, approaches and piers, Longview bridge, Longview, Wash., to Northwest Steel Rolling Mills.
250 tons, St. Benedict's convent, Lisle, Ill., to Olney J. Dean Co.
200 tons for sewage disposal plant, Bergenfield, N. J., to Concrete Steel Co.
200 tons, MacChesney building, Chicago, to Barton Steel Co.
140 tons, Marshall Field & Co. store building, Oak Park, Ill., to Barton Steel Co.
110 tons, telephone building at Great Neck, N. Y., to Carroll-McCreary & Co. Inc.
100 tons, building at Union stockyards, Chicago, to Inland Steel Co.
100 tons, manufacturing building, Chicago, to Barton Steel Co.

CONTRACTS PENDING

1270 tons for subway sections 3 and 4, route 108, Borough of Queens, New York.
380 tons for subway section 7, route 109, Brook-

lyn, N. Y. Hart & Early Co. Inc. low on general contract.
300 tons, apartment building, Hyde Park boulevard, Chicago.
210 tons for subway section 6, route 107, Brooklyn, N. Y.
185 tons, West Spokane street bridge, Seattle. General contract to General Construction Co.
120 tons, building, Oak Leaves Printing Co., Oak Park, Ill.
100 tons, Faragut junior high school, Chicago.
Unstated tonnage, sewage treatment works, De Kalb, Ill.
Unstated tonnage, two bridges and 80 miles of state highways for Tennessee. Bids to be opened April 5 by Robert H. Baker, state highway commissioner, Nashville, Tenn.

February Shapes Gain

Washington, March 19.—Computed tonnage of structural steel orders in February was the highest since September, 1928, according to the department of commerce. Actual tonnage continued to gain. Monthly comparisons follow:

	New Orders—Actual tonnage	New Orders—Per cent of capacity	New Orders—Computed tonnage	Shipments computed tonnage
1928				
January	175,987	55	211,750	204,050
February	221,836	69	265,650	173,250
Tolta, 2 mos.	397,823	....	477,400	377,300
March	215,395	67	257,950	227,150
April	196,958	61	234,850	238,700
May	256,525	80	308,000	261,800
June	249,045	78	300,000	261,800
July	246,561	77	296,450	265,650
August	293,819	92	354,200	288,750
September	265,610	83	319,550	273,350
October	207,696	65	250,250	319,550
November	199,129	63	242,550	281,050
December	198,445	64	246,400	277,200
Total, 1928	.....	71	3,287,600	3,072,300
1929				
January	205,659	69	246,400	273,350
February	213,042	70	269,500	238,700
Total, 2 mos.	418,701	62	515,900	512,050

Reports received from April to December, 1928, were from 201 to 241 firms with a capacity of 308,000 tons to 322,000 tons.

Valley Mills Keep Pace

Youngstown, O., March 19.—Steelworks operations are being maintained at the highest rates this year, or about 90 per cent. With 49 of 51 open hearth units active for the independents, and Steel corporation subsidiary units at 80 to 85 per cent, further additions to output are being made by the bessemer departments. Independents for the second successive week, are operating 123 of 125 sheet mills. Three additional pipe mills are active, making 12 operating out of 20 welded and seamless units. Independent bar mill activities continue at 75 per cent, and Carnegie Steel Co. at 85 per cent. Strip and tin mills continue at capacity. The Byers skelp and puddle mills at Girard are on full.

Hoist Business Soars

New York, March 19.—Electric hoist business increased sharply in February. A gain of 40.71 per cent from the standpoint of number over the preceding month was reported by the Electric Hoist Manufacturers association. From the standpoint of value, business increased 36.974 per cent. Shipments yere down 5.74 per cent.

Rails, Cars

Car Awards Slacken—Prospects Bright as Inquiries Show Life—Western Rail Orders Heavy

WHILE some vigor has gone out of railroad car demand, prospects remain bright for good wind-up to March. A recent heavy buyer in the West asks for 2500 more. Other live inquiries pending involve from 400 to 1400 cars. About half of 60,000 tons of rails placed last week, went to western mills. Electrification in the East will mean much material buying.

RAILROAD TRACK PRICES, PAGE 804

Chicago, March 19.—Fresh inquiries for railroad cars give promise of further heavy steel tonnage on mill books. Chicago & North Western, in addition to more than 3000 cars ordered earlier this season, is asking bids on 2500 50-ton box cars. Pending car orders include 1400 for the Northern Pacific and 400 flat cars and cabooses for the Southern Pacific. Car builders are steadily increasing their operations.

Union Switch & Signal Co. will install automatic block signals on 82 miles of single track line for the St. Louis-San Francisco between Bristow, Okla., and Oklahoma City, Okla., as well as on 176 miles of single track in Ontario for the Canadian Pacific.

Of the 60,000 tons of standard section rails placed last week in mills throughout the country, about 30,000 tons went to western mills. This comprises tonnage for the Chicago, Milwaukee, St. Paul & Pacific, and a part of the 28,000 tons placed by the Southern railroad. About 5000 tons of rails are on inquiry in lots of 500 to 1500 tons. From 5000 to 6000 tons of track fastenings was closed and about 12,000 tons of track accessories is on inquiry. The latter include those asked for under quarterly schedules.

Rail mill operations in the Chicago district continue at practical capacity.

New York, March 19.—Fresh car demand in this district is relatively light. However, substantial requirements are pending with the liklihood that a number of cars will be placed before the end of the month. Lehigh Valley railroad is considering the electrification of 75 miles of double track. This work, including the purchase of 20 locomotives at about $3,000,000, would cost close to $7,000,000, it is estimated. The new York Central has made surveys for electrifying its line from Croton, N. Y., to Buffalo at a cost of $100,000,000 to $150,000,000, but this undertaking is not expected to get under way for at least another year.

Approximately 12,000 freight cars now are pending. The Chicago, Burlington & Quincy will rebuild 750 hoppers in its own shops.

Pittsburgh, March 19.—Improvement so far this year in demand from railroads applies more to equipment than to fastenings. Local producers of spikes, tie plates and other accessories are fairly well engaged, although demand shows little improvement compared with the rate a year ago. Freight car builders in this district, however, have good bookings with a fair volume of new work in prospect.

CAR ORDERS PLACED

American Bridge Co., 10 flats to Koppel Industrial Car Co.
American Oil Co., three tank cars, to General-American Tank Car Corp.
Chicago, Burlington & Quincy, 750 hoppers to own shops.
Cities Service Tank Line, New York, five tank cars to General-American Tank Car Corp.
Delaware & Hudson, three steel baggage and mail cars, to American Car & Foundry Co.
Missouri-Kansas-Texas, steel shell for business car, to American Car & Foundry Co.

LOCOMOTIVE ORDERS PLACED

Chicago & North Western, 25 freight locomotives, to Baldwin Locomotive Works.
Manufacturers railway, two freight locomotives, to Baldwin Locomotive Works.

CAR ORDERS PENDING

Chicago & North Western, 2500 50-ton box cars.
Hocking Valley, three steel mail and express cars.
New York Central, recently noted as inquiring for 71 miscellaneous coaches, will purchase 30 milk cars, 20 baggage cars, 10 baggage and passenger cars and 10 dining cars.
New York, Chicago & St. Louis, 250 steel gondolas.
New York, New Haven & Hartford, 174 miscellaneous coaches pending. These were not placed as noted in last week's issue.

LOCOMOTIVE ORDERS PENDING

Elgin, Joliet & Eastern, six heavy locomtives.

Chicago Steady at 95

Chicago, March 19.—Steelworks operating rate in Chicago district is steady at about 95 per cent. Operations cannot be appreciably crowded from the present rate in view of the tight semifinished situation. Illinois Steel Co. has 20 of its 27 stacks active, ten at Gary, nine at South Chicago and one at Joliet. Inland Steel Co. and Youngstown Sheet & Tube Co. have four and two steelworks stacks active, respectively, at Indiana Harbor, and Wisconsin Steel Co. has its three stacks in blast at South Chicago. Thus 29 of the 36 steelworks stacks in the district are blowing. Bar, plate and hot strip mills are operating virtually at capacity.

The Market Section

Wire

Specifications Heavier and Some Second Quarter Contracts Are Being Signed—Prices Steady

PRODUCERS of wire and nails find backlogs increasing somewhat, with manufacturers' wire most in demand. Contracts for second quarter tonnage are larger than a year ago. Prices have not been changed and contracting is deliberate. Nails continue slow but makers hold prices on the theory that concessions would not stimulate buying. Welded mesh is in good demand.

WIRE PRICES, PAGE 804

Pittsburgh, March 19.—Specifications for wire products are heavier and show an improvement over the rate a month ago. Contracting for second quarter is fairly well along although the lack of price change and the fact that first quarter contracts do not expire until March 31 give no incentive to buyers to cover immediately. Current prices of 2.50c to 2.60c for plain wire are well observed. Despite lack of activity in wire nails, mills are not disposed to quote under $2.65 to $2.75, feeling that concessions would not stimulate business.

Worcester, Mass., March 19.—Demand for wire, especially specialties, continues to expand slowly. Utilities are taking more material and manufacturers' wire is moving well ahead of last year. Books are open for next quarter at unchanged prices and some contracting has been done. Plain wire is steady at 2.75c, Worcester, base, to dealers.

Buffalo, March 19.—Wireworks producing welded mesh for concrete construction report a prospect of large sales this spring and summer. The price is around 3.60c. Jobbers have taken heavy shipments of cloth and netting for stocks. Demand for common wire is good.

Cleveland, March 19.—Wire products jobbers are experiencing better turnover and order more frequently. This has enabled the mills to ship out most accumulated low priced orders. Some mills have made a start on contracts at the higher figures. Both wire and nail demand has improved.

Chicago, March 19.—A slight increase is noted in the tonnage of nails, woven fencing and barbed wire on mill books. Manufacturers' wire continues active, demand showing increase for spring wire for automobile seats. Second quarter contracting is making good progress and is ahead of a year ago. The wire products market is reported steady at 2.55c, Chicago or western mills, for bright plain wire, and $2.70 for wire nails, to large jobbers.

Case To Be Continued

New York, March 19.—Hearings in arbitration proceedings between E. Arthur Tutein Inc., Boston, and the Hudson Valley Coke & Products Corp., Troy, N. Y., were held at 42 West Forty-fourth street, last Thursday, Friday and Saturday and will be resumed March 21. E. Arthur Tutein appeared on the stand in his own behalf and a number of witnesses were called by Mr. Tutein's representatives.

Indiana Steel & Wire Co. and Warner Gear Works, both at Muncie, Ind., were low in the three-month no-accident competition among Muncie manufacturing plants.

Cold Finished Steel

Second Quarter Contracting Practically Finished

COLD FINISHED PRICES, PAGE 803

Pittsburgh, March 19.—Most consumers of cold finished steel bars have signed contracts for second quarter and the advance of $2 a ton over first quarter, to 2.30c, Pittsburgh, is well observed. Most first quarter contracts were specified fully although producers fail to note substantial buying in anticipation of higher second quarter price. Backlogs are small and the former practice of hand-to-mouth buying is expected to continue over second quarter. Specifications generally are in good volume.

Cleveland, March 19.—Heavy specifications on expiring first quarter contracts in cold finished bars, apparently are for immediate consumption. Buyers are covering second quarter needs at 2.35c, Cleveland, which is $2 higher. Automotive demand continues heavy. Diversified tonnage is up to normal seasonal requirements.

Strip

Mills at Practical Capacity But Deliveries Fall Behind—Prices Hold Firmly—Auto Needs Big

MAKERS of strip are operating as close to capacity as semi-finished steel supplies will allow. Consumers have specified out their entire first quarter contracts and are buying for immediate delivery in addition. Cold-rolled strip demand is increasing. Contracts are being signed for second quarter and heavy backlogs aid mills in holding prices.

STRIP PRICES, PAGE 804

Pittsburgh, March 19.—Producers of hot and cold-rolled strip steel have yet to feel the decline from the peak demand which they have been experiencing for several weeks. Contracting for second quarter is fairly active and heavy backlogs are enabling producers to take a firm stand on new prices. Current quotations of 1.90c, Pittsburgh, for hot strip over 6-inch to 24-inch, and 2.00c for sizes under 6-inch are well observed in new bookings, with cold-rolled material quoted 2.75c to 2.85c. Backlogs of leading producers have not suffered from capacity operations and deliveries still are a problem to consumers requiring prompt shipment. Old contracts were fully specified prior to the March 15 expiration date, but practically all material placed is for immediate requirements.

Cleveland, March 19.—Hot strip buyers no longer question 1.90c to 2.00c, Pittsburgh, according to width, but show increasing anxiety over deliveries. A similar situation rules in cold strips. Most deliveries are four, five or six weeks deferred. Prices, having settled to 2.75c to 2.85c, Cleveland-Pittsburgh, with the new card of extras which brings a better return on the wide sizes, are entirely firm.

Chicago, March 19.—Hot rolled strip steel producers are operating almost at capacity. The rate varies with the assurance of mills as to their semi-finished supply. Hot strip, 6 inches and under, is 2.20c to 2.30c, Chicago, and material 6¼ to 24 inches at 2.10c to 2.20c. Cold rolled strip business has seen a steady increase the past three or four weeks. Producers in this territory report miscellaneous business on the basis of 2.85c. Pittsburgh-Cleveland.

Big Segment Job Looms

New York, March 19.—Estimates of cast segments required for the proposed vehicular tunnel to be constructed by the board of transportation under the Narrows, between Brooklyn and Staten Island, range from 125,000 to 175,000 tons, depending partially upon the route. The Holland vehicular tunnel required 110,000 tons of gray iron and 10,000 tons of cast steel segments and the proposed project is larger. It may be a year before definite plans are issued.

Nonferrous Metals

Heavy Consumption in All Lines Taxes Output—Copper Prices Soar—Lead Quotations Rise in Strong Market

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Mar. 13	20.00	20.10	19.75	48.55	48.60	7.25	7.15	6.35	23.90	9.37½	35.00
Mar. 14	20.25	20.35	19.75	48.55	48.60	7.25	7.15	6.35	23.90	9.31	35.00
Mar. 15	20.50	20.60	20.00	48.87½	48.87½	7.27½	7.17½	6.35	23.90	9.31	35.00
Mar. 18	22.00	22.10	21.50	48.62½	48.62½	7.27½	7.17½	6.35	23.90	9.56	35.00
Mar. 19	22.00	22.10	21.50	48.68	48.68	7.50	7.37½	6.35	23.90	9.68	35.00

NEW YORK, March 19.—Consumption of nonferrous metals has set a pace that is taxing production to the utmost. This is particularly true in copper, where the industry has come into the busiest season of the year without any surplus stocks and working supplies at the minimum at which capacity operations can be maintained.

The price has shot up, adding to the size of each increase as it has gone along. A rise has been as much as 1 cent in a day, an increase formerly considered large for an entire month.

On top of the demand and supply situation has been added trouble in Mexico, an important source of lead and copper, as well as zinc to a certain extent. The coming of spring in Europe also is bringing increased business there. The London markets are in an excited speculative situation, and it is only with the greatest effort that producers here are able to resist the effects of violent trading abroad. All London prices went up several pounds sterling Monday morning and within a few hours fell back, losing a large proportion of the rise.

Brass and copper mill products have gone up with the copper market, roughly 2 cents in the week, but high brass has gone up little less than copper, as zinc has not changed. Some items have gone up more than copper.

Copper—Sales of copper in the domestic market in the past week have not been large, nor has the demand been of unusual size in the past few days. Just a week ago when statistics revealed a stronger situation which had been expected, demand was extraordinary and large business was done, mostly for July shipment. Export business in the past two weeks has been above average but lighter in the past few days. These lighter domestic and export sales are due to the fact that producers are practically sold out through July and do not want to sell further. They are discouraging users from overbuying.

Zinc—Prime western has sold in a routine way at 6.35c, East St. Louis, unchanged for several months. Users appear to be poorly covered ahead, and so greater activity is expected.

Tin—The price has jumped rapidly after an unusually steady period, going up about 1.00c. Users have bought more actively in all positions. The statistical position continues one of abundant supplies against record consumption in this country and good consumption abroad, but the price has been unusually low of late.

Lead—Use is unusually large and producers are well booked for this month and next. All indications point to a continued strong market. Prices were advanced Tuesday.—*Daily Metal Trade.*

About 1750 Sweden yielded 65,000 tons of iron annually, or 40 per cent of the world's production.

Mill Products

Base prices cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	25.62½
Copper, hot rolled	31.75
Lead, full sheets (cut ¼c more)	10.00
Zinc sheet (100-pound base)	$9.75
Zinc strip (100-pound base)	$8.75
Aluminum, flat sheets, up to 10 gage, 3" to 72" wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	31.12½
Copper	33.25
RODS	
Yellow brass (high, full turnings)	23.37½
Naval brass	26.25
WIRE	
Copper	23.87½
Yellow brass (high)	24.25

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	14.00 to 14.50
Chicago	14.50 to 15.00
Cleveland	15.00 to 15.50
HEAVY YELLOW BRASS	
Cleveland	10.75 to 11.00
ZINC	
New York	3.50
Cleveland	3.00 to 3.50
HEAVY COPPER AND WIRE	
New York	17.00 to 17.50
Boston	17.75 to 18.00
Chicago	16.50 to 17.00
Cleveland	17.50 to 18.00
RED BRASS BORINGS	
New York	12.00 to 12.50
YELLOW BRASS TUBING	
Cleveland	11.25 to 11.50
LIGHT COPPER	
New York	15.00 to 15.50
Chicago	15.00 to 15.50
Cleveland	15.50 to 16.00
LIGHT BRASS	
Boston	9.25 to 9.50
Chicago	10.00 to 10.50
Cleveland	9.25 to 9.50
ALUMINUM	
Clippings, Cleveland	18.00 to 18.50
Borings, Cleveland	9.00 to 9.50
Cast, Cleveland	12.75 to 13.00
Cast, Boston	10.50 to 11.00

Secondary Metals

Remelt aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	20.25 to 20.50

Coke By-Products

Less Benzol Wanted — Naphthalene Active—Sulphate of Ammonia Dull

New York, March 19.—Demand for benzols is slightly less active, but prices continue unchanged. Other leading light oil distillates are moving briskly, with distributors still somewhat pressed in making deliveries.

Brisk trading prevails in naphthalene, with flakes and balls unchanged. While many large consumers are now fairly well covered for the spring cleaning season, a good volume of miscellaneous buying continues.

Sulphate of ammonia is moving slowly, with the market little more than nominal at $2.30, delivered, on material for domestic account and at $2.20, port, in double bags, on export.

Coke Oven By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.23
Toluol (nominal)	0.40
Solvent naphtha	0.34
Commercial xylol	0.30
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.30

Cooper, Bessemer Unite

Plans to form the Cooper-Bessemer Corp. have been completed with the merging of the Bessemer Gas Engine Co., Grove City, Pa., and the C. & G. Cooper Co., Mt. Vernon, O. The new corporation is capitalized with $5,000,000 in preferred stock and $200,000 in no par common stock. Assets total more than $9,000,000. Dr. E. H. Fithian, president of the Bessemer company, was made chairman and Beatty B. Williams, general manager of the Cooper company was placed in the same capacity in the new organization.

Warehouse

Weather Improvement Is Aid to Jobber Selling—Material Is Going to Diversified Lines—Prices Well Observed

BETTER weather has brought about improved demand upon warehouses generally. Buying is diversified, practically every consuming line being represented. Some buyers place only small orders at the beginning of the week, hoping that deliveries on their mill orders will resume before the week ends. By that time, repeat orders have to be placed with the jobbers. March aggregate tonnage, therefore, is expected to be well ahead of February. At Buffalo business to date is 5 to 10 per cent ahead of the same period in 1928.

Cincinnati—The warehouse market here continues on an even keel. Warehousemen report tonnage as good. Prices continue firm.

New York—Jobbing demand shows some improvement over a week ago. It still is short of the more optimistic predictions made at the beginning of the month. Meanwhile, prospects continue promising, with considerable activity in structurals. Prices are unchanged.

Pittsburgh—Milder weather has not as yet been reflected in substantial improvement in warehouse sales. Total business holds practically to the volume of recent weeks. Orders are occasionally received because mills are unable to make desired shipments. Prices are well observed throughout the list. No revisions have been made following recent mill increases.

Cleveland—Diversified buying is still being enjoyed by Cleveland jobbers. Repeat orders often are placed within the period of a week's time, owing to the fact that customers have been unable to get resumed deliveries from the mills. Steel for outside building work is in good demand. Prices are unchanged and hold firmly.

Buffalo—Warehouses report business to date this year as running 5 to 10 per cent ahead of the corresponding period of 1928. Buying holds up well because of deferred shipments by the mills. Jobbers' prices hold firmly to established levels.

St. Louis—Two weeks of milder weather have substantially quickened the demand for seasonal merchandise from the iron and steel warehouses. Ordering out of materials by dealers in the country has improved, particularly supplies for use on farms. Most every consuming line is represented. Prices are unchanged.

Philadelphia—Jobbers report some let-down in demand. Prices continue firm and unchanged.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York†††‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles lcl.	3.00c
New York	2.90c to 3.30c
Philadelphia	2.75c to 3.10c
Pittsburgh	2.75c to 3.175c
San Francisco cl.	2.00c
San Francisco lcl.	2.25c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.25c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Phila., 3/16-in.*	2.90c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.45c
Boston, 3/16-in.	3.915c
Buffalo	3.50c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	4.50c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.20c
San Farncisco	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore	3.25c to 4.00c
Boston	4.85c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	3.90c
Cleveland	3.60c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	3.90c to 4.00c
Philadelphia*†	4.00c
Pittsburgh**	3.80c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.95c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore	4.30c to 4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.65c
Cincinnati	4.75c
Cleveland	4.45c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.30c
Los Angeles	5.30c
New York	4.75c
Philadelphia*†	4.75c
Pittsburgh**	4.55c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	5.10c
St. Paul	4.90c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	3.85c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit, ⅜-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.15c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.40c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons,	Flats, squares
Baltimore (c)	3.35c	3.85c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.60c	4.10c
Philadelphia*	3.60c	4.00c
Pittsburgh	3.60c	4.10c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.25c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, rounds	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **25 or more sheets. *†50 or more bundles.

Pacific Coast

First Tin Plate Mill in Operation—Coast Trade Is More Active

INITIAL production of tin plate on the Pacific coast is attracting attention as the new mill of the Columbia Steel Corp. is started. Large outlet is provided in canneries. Much activity in building, shipbuilding and pipe laying is bringing business from various centers. Scrap prices are high and lowgrade pig iron is being used in preference in some cases.

San Francisco, March 16.—(*By Air Mail*)—Among the more important developments on the Pacific Coast this week were the call for bids for two passenger ships for the Matson Navigation Co., involving about 20,000 tons of plates and shapes, the award of more than 1000 tons of cast iron pipe for Los Angeles and the placing of a fair sized tonnage of concrete bars.

For the first time in the history of the Pacific Coast, tin plate was produced this week in the plant of the Columbia Steel Corp. at Pittsburg, Calif. The new mill, with a capacity of 38,000 tons per year, began operating March 12 and the output has already been sold. (A description of the new Columbia mill appears on page 782 of this issue of IRON TRADE REVIEW.)

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Concrete bar awards during the past week aggregated more than 1900 tons and brought the total for the year to 17,676 tons, compared with 19,229 tons for the corresponding period in 1928. Award of 400 tons for an apartment on North Rossmore avenue, Los Angeles, was taken by the Blue Diamond Co. Most pending business calls for lots of less than 100 tons. Merchant bar material continues to hold to a level on 2.30c c.i.f., while prices on out-of-stock material in the San Francisco and Los Angeles district are somewhat firmer at 2.20c to 2.30c, base, on carload lots.

Plate bookings this week were the second heaviest this year and totaled 11,100 tons, bringing the aggregate for the year to 55,778 tons, compared with 9024 tons for the same period a year ago. Among the more important lettings of the week were 6000 tons for a pipe line for the Pacific Gas & Electric Co., placed with the Western Pipe & Steel Co., 1700 tons for three cutters for the coast guard, San Francisco, booked by the General Engineering & Drydock Co., and 3200 tons for oil storage tanks for the Richfield and Rio Grande Oil companies, Los Angeles, booked by the Western Pipe & Steel Co. Bids were taken this week by the Matson Navigation Co., San Francisco, on 13,200 tons for two passenger ships.

Bookings of structural steel shapes this week aggregated 2952 tons. To date this year 51,205 tons have been placed, compared with 40,114 tons for the corresponding period in 1928. The Judson-Pacific Co. took 710 tons for an apartment in San Francisco and the General Engineering & Drydock Co. secured 800 tons for three cutters for the coast guard service, San Francisco. Other awards included 370 tons for two apartments, San Francisco, placed with the McClintic-Marshall Co. The largest pending inquiry calls for more than 6000 tons for two ships for the Matson Navigation Co., San Francisco. Plain material continues firm at 2.35c c.i.f.

Other Finished Material

Cast iron pipe demand has fallen off during the past week or two and awards this week totaled less than 4000 tons. Los Angeles placed 1080 tons of various sizes with the American, National and Pacific States Cast Iron Pipe Co. The city of Tacoma awarded Paine & Galucci Inc. 2173 tons for the improvement of South Fifty-sixth street, Glendale, Calif., placed 392 tons, 188 tons and 84 tons, respectively, with American Cast Iron Pipe Co., C. G. Claussen & Co. Inc., and National Cast Iron Pipe Co. Pending business aggregates less than 4000 tons. New inquiries of the week involve 120 tons for Astoria, Oreg., and 165 tons for Whittier, Calif. No action has yet been taken by the Southern Pacific Co. on its inquiry for 2242 tons of pipe.

Sheet and tin plate mill representatives are keenly interested in the effect that the opening of the Columbia Steel Corp. tin plate mills may have on the market in this district.

More Activity at Seattle

Seattle, March 14.—Increased activity is evident in the iron and steel trades of the Pacific Northwest. Improved weather has stimulated business and outdoor work. While no large tonnages have been placed this week, lettings were normal and additional projects are up for award in the immediate future.

The foundry business is reported active with logging, mill machinery, cannery and marine work under way. Local plants are unusually busy. Prices of No. 1 Columbia have advanced $1 to $27, due to general firmness in the market. This advance does not apply to contract sales. There is some movement of No. 3 Columbia at $23.50, which is being purchased in lieu of cast iron scrap by several local plants. Between 300 and 400 tons of Burn India iron have been bought by foundrymen here at $26 for June-July delivery. The coke market is unchanged, shipments of Victoria and Tyneside arriving in small lots, prices remaining unchanged at $13.50 and $13.25 respectively.

Bars, Plates and Shapes

Small tonnages predominate in reinforcing bar awards. Both local mills report unchanged operations, the total of new business being well maintained. Merchant bars are unchanged at 2.35c while concrete bars continue firm at 2.20c. Northwest Steel Rolling Mills this week took 300 tons for the piers and approaches for the Longview bridge. Business pending includes 350 tons for a hotel at Bellingham, 185 tons for the Spokane street bridge, Seattle, and 100 tons for a state overhead crossing in Benton county.

General Construction Co.'s bid of $376,100 for construction of the superstructure of the Spokane street bridge, Seattle, has been officially accepted but the subcontract for the 1500 tons of shapes involved is still pending.

Pipe Sales Are Closed

American Cast Iron Pipe Co. this week closed for 600 tons for a water extension project at Vancouver, Wash., and 200 tons for Mt. Vernon. Some heavy tonnages are pending at Vancouver, B. C., and awards are yet to be made for a number of water extension jobs in Seattle. Astoria, Oreg., is in the market for 7512 feet of 6-inch cast iron pipe and 24 6-inch gate valves.

Discontinues Wide Sheets

Youngstown, O., March 19.—The Republic Iron & Steel Co. here will, as soon as present bookings have been dissipated, discontinue the manufacture of blue annealed sheets wider than 31½ inches. Hot strip wider than 24 inches will carry the blue annealed sheet extras as heretofore. It is understood that the building which has been used for their manufacture will be devoted to the production of electrical sheets.

The Republic company is transferring its galvanizing equipment to its Deforest plant from the Trumbull works. Galvanizing, therefore, will be done at the Niles, O., plant instead of at Warren, O. At Wednesday's meeting a program of plant rehabilitation and re-arrangement will be determined upon for the Republic company's various works and will be made public later.

A ruling by the federal board of arbitration increases wages of 16,000 shop employes of the New York Central railroad 6 2/3 per cent.

Institute Proposes Higher Tariff

Iron and Steel Group Would Raise Duties on Finished Products, Lower Them on Raw Materials—Debate Manganese Ore Rate

By Lynne M. Lamm

WASHINGTON, March 19.—American Iron and Steel institute has submitted to the house ways and means committee, which is revising the Fordney-McCumber tariff act of 1922, definite recommendations concerning the metals section.

In general the program laid before the committee by Thomas J. Doherty, tariff representative of the institute, recommends higher duties on finished iron and steel products, reductions on raw materials and a clarification of classifications.

A strong stand was taken by the institute against the duty on manganese ore, which is described as "outrageous" and "a grievous burden upon the steel industry." On similar grounds opposition is registered to the present duties on molybdenum and tungsten ores. Halving of the present duty of 2.00c to 8.00c per pound on ferrosilicon is urged.

The following are the more important recommendations proposed by the institute.

Par. 301. Pig iron. Present duty $1.12½ per ton; proposed duty $3.

Par. 303. Muck bars, bar iron, etc. Present duty 2/10c to 1½c per pound; proposed duty 5/10c to 2½c.

Par. 304. Steel ingots, blooms, steel bars, castings, etc., present duty 2/10c to 20 per cent; Proposed duty 2/10c to 35 per cent. Concrete reinforcing bars and sheet piling to be inserted in this paragraph.

Par. 305. Alloy steel. Present duty 8 per cent plus extras for additional alloy content; Proposed duty 20 per cent plus extras for additional alloy content.

Par. 307. Plates. Present duty 7/20c per pound to 20 per cent; Proposed duty 1c per pound to 35 per cent.

Par. 308. Black sheets and skelp. Present duty 45/100c per pound to 20 per cent; proposed duty 5/10c per pound to 35 per cent.

Par. 309. All iron and steel sheets, plates, bars, rods, hoops, bands, excepting tin and terne plates, present duty when galvanized 2/10c per pound more than if not galvanized. No change proposed.

Par. 310. Tin and terne plate. Present duty 1c per pound. No change proposed.

Par. 312. Beams, girders, joists, angles, channels, etc. Present duty on plain material 1/5c per pound; proposed 5/10c per pound. When fabricated, present duty 20 per cent; proposed duty 1c per pounds. Building forms, sashes, etc., present duty 25 per cent, proposed duty 35 per cent.

Par. 314. Cotton ties. Present duty ¼c per pound. Proposed duty 4/10c. In the cotton tie season just ended 1,000,000 bundles, out of a total consumption of 2,000,000 to 3,000,000 bundles, were foreign. Since a bale of cotton is sold upon its total gross weight, which includes six ties weighing 9 pounds, the cotton farmer would receive for his cotton ties the same price he gets for his cotton.

Par. 315. Wire rods. Present duty 3/10c to 6/10c per pound; proposed duty 4/10c to 35 per cent.

Par. 316. Round iron or steel wire. Present duty ¾c per pound to 25 per cent; proposed duty 1c per pound to 35 per cent. Flat wire and strip not thicker than ¼-inch and not exceeding 16 inches in width, present duty 25 per cent, proposed duty 35 per cent. Wire rope, present duty 35 per cent, proposed duty 35 per cent.

Par. 322. Tie plates, splice bars, fish plates, etc. Present duty ¼c per pound; proposed duty 4/10c.

Par. 323. Axles, blanks, etc. Present duty 6/10c per pound. No change proposed.

Par. 328. Iron and steel, pipe, conduits, tubing, etc. Present duty ranges from ¾c per pound to 30 per cent. Proposed date on sections not thinner than 65/1000 inch if not less than ⅝-inch in outside diameter, 1c per pound; if less than ⅝-inch and not less than ½-inch in outside diameter, 1¼c per pound; under ½-inch outside diameter 1¾c. Proposed minimum on charcoal iron products 1¼c. Flexible metal tubing and conduits 35 per cent.

The position of the institute on manganese ore is:

The tariff act of 1922 placed on manganese ore and concentrates containing over 30 per cent of manganese a duty of 1 cent per pound on the metallic manganese content. This means that every ton of manganese ore that contains 50 per cent of metallic manganese pays a duty of $11.20. Manganese ore and oxide had previously been free of duty throughout all of our tariff history.

With the placing of duty on manganese ore there was a corresponding duty placed on ferromanganese of 1⅞ cents per pound on the metallic manganese content. Commercially ferromanganese runs from 78 to 82 per cent in manganese content. Taking 80 per cent ferromanganese, the duty of 1⅞ cents per pound on the manganese content means that every ton of ferromanganese pays a duty of $33.60. This duty laid upon manganese ore is a grievous burden upon the steel industry of this country, and it is impolitic, unwise, and economically unsound.

The American Iron and Steel institute is a firm believer in the principle of protection and protective duties, and were it possible to cultivate the production of manganese ore in this country by means of protective duties, not one word would be uttered in opposition thereto. But, the truth is there is not a sufficient supply of manganese ore of the grade required for use in making ferromanganese, and no rate of duty however high can put into the earth that which is not there.

Various claims are made that by means of so-called beneficiation processes a low grade ore, that is to say, one that contains a low manganese content, can be stepped-up, so to speak, so that a concentrate is obtained with the requisite manganese

Few Changes Loom in Metals Tariff Duties

DESPITE the strict secrecy which is being observed by the subcommittee of the house ways and means committee which is considering the metals schedule of the tariff act, it is understood that comparatively few changes are in prospect.

More changes in classifications than in rates are rumored. While strong arguments have been made for transfer of manganese ore to the free list, it is not believed that so radical change is possible at this time. A compromise is more to be expected.

Because the subcommittee in charge of the metals section is the first to finish its job, the deduction of few changes has been drawn. However, revisions upon the floors of the house and senate are within possibility.

Representative Bacharach, of New Jersey, head of this committee, first scanned the entire metals schedule carefully with experts of the tariff commission, making initial revision. Then the entire subcommittee went over the schedule, which is now ready for consideration by the Republican members of the ways and means committee.

The special session of congress convenes April 15 and will first take up farm relief. It may therefore be later than April 20 when the new tariff act is submitted. President Hoover and many congressional leaders favor a minimum of tinkering. For the first time in history experts of the tariff commission have been present at subcommittee meetings and the commission as a whole has met with these bodies.

content for the making of commercial ferromanganese, but by the time this result is reached the cost of production is absurdly high and the article is not available commercially.

Even under the abnormal stimulus to manganese production in this country, resulting from the enormous demand for manganese during the war and the interruption of foreign supplies due to war conditions on the sea, the domestic production was wholly insufficient to supply the demand. This notwithstanding the phenomenally high prices and the fact that the United States government, in effect, financed the mines.

The imposition of this duty on manganese ore was an attempt to perpetuate war conditions in times of peace for the benefit of an industry that is an exotic. Since our supplies of manganese ore in this country are so meager that they can be mined only when prices are extremely high, it would seem the better policy to conserve those supplies and to draw freely on the foreign countries, Russia, Africa, and Brazil, where there is a bountiful supply of manganese ore.

For the calendar year 1927 the government figures show that the equivalent ad valorem of the duty collected on manganese ore was not less than 73.65 per cent, which is a perfectly outrageous duty to impose on a crude substance just as it is taken from the earth and which has to be further manufactured by many different processes before it reaches its ultimate place in commerce. Even when it is converted into ferromanganese it is no further advanced than a substance that is merely thrown into a steel furnace.

"Inordinate; Disproportionate"

In regard to molybdenum and tungsten the institute states:

The duties levied on molybdenum ore, tungsten ore and their concentrates are inordinately and disproportionately high, but because of their limited use as compared to ferromanganese and ferrosilicon, the effects are not of such widespread damage.

As shown by the government figures for the calendar year 1927, the ad valorem equivalent of the duty taken on molybdenum ore was 41.92 per cent, and in the case of tungsten ore it was not less than 180.75 per cent. In the face of these figures, comment is hardly necessary nor is any argument required to demonstrate that those duties are wholly out of line and cannot be justified on any ground that appeals to human reason.

Yet, the ways and means committee has before it an application from interested parties asking for an increase in the duty on tungsten ore of 50 per cent over the present oppressive rates. The same observations may be here repeated which were made in respect to manganese ore, namely that there is no objection to reasonable protection that has the purpose and effect of increasing domestic production, but these enormous duties on ores have no such effect, or if and when they have, it results in a tremendous handicap to other and greater industries.

Concerning ferrosilicon the institute takes the following position:

The tariff act of 1922 gave recognition to the ferroalloy industry in a most emphatic way and with a perfectly proper intent of protecting and stimulating the domestic industry. No possible criticism can be made of such a policy, and without quarreling with said policy we urge that experience has shown that the duties fixed for ferrosilicon are not necessary, that is to say, they are higher than is necessary.

The government figures for the calendar year 1927, show that the only substantial quantity of ferrosilicon imported was that in the class specified as containing 8 per cent or more but less than 60 per cent silicon. The quantity imported was 16,443,437 pounds and the ad valorem equivalent thereon was 35.71 per cent, practically all a blast furnace product called blast furnace ferrosilicon containing not more than 18 per cent silicon.

All other ferrosilicon is produced in the electric furnace and seldom contains less than 60 per cent silicon; the grade usually runs 65 per cent to 68 per cent silicon. Of the ferrosilicon containing 60 but not more than 80 per cent silicon there were 11,200 pounds imported and the ad valorem equivalent was 18.16 per cent. Of the ferrosilicon containing 90 per cent or more of silicon there were 3955 pounds imported and the ad valorem equivalent was 118.06 per cent.

Duty of about one-half of that now imposed would seem ample for a material like ferrosilicon, whose only use is to be thrown into a steel furnace in the manufacture of steel.

On concrete reinforcing bars and on sheet piling, which at present are dutiable at 1/5c per pound, the institute recommends the duties applicable in Par. 304, which the institute would give a range of 3/10c per pound to 35 per cent ad valorem. Cognizance is taken of the increasing utilization of fine steels by the recommendation that in general the duty would be 20 per cent ad valorem instead of 8.

Changes in Structurals

Important changes are suggested for Par. 312 relating to structural material. According the institute, recent decisions have had the effect of placing advanced and relatively expensive steel products under Par. 312 at the rate of duty of 1/5c per pound, the lowest rate in the iron and steel schedule, although the material from which they had been advanced is in many cases dutiable at much higher rates of duty under Par. 304. It is proposed in the interest of good administration and for the avoidance of further litigation that the phrase "building forms" and "structural shapes" be omitted from Par. 312.

The tendency of the tariff act of 1922 to impose extremely low rates of duty on iron and steel products effected a reduction in the duty on wire that experience has shown would be unwise, states the institute's brief. It is suggested that the first bracket of Par. 316 carry a rate of 1c per pound, the second bracket 1¾c, the third bracket 2c and that the ad valorem rate on wire valued over 6c per pound be fixed at 35 per cent.

Barbed wire, now on the free list, will be dutiable at 2/10c per pound if the institute is successful. The proposed rate on galvanized wire not otherwise provided for would be ¾c per pound.

It is proposed to reclassify iron nails in Par. 331 to conform to present manufacturing and commercial practice. On cut nails and cut spikes exceeding 2 inches in length the institute would increase the duty from 4/10c per pound to 5/10c; on wire nails, spikes, staples, etc., the institute would impose a duty of 4/10c per pound when the product is not less than 1 inch in length and exceeds 148/1000-inch in diameter. The institute's brief states:

Rejoinder on Manganese

It is a matter of common knowledge that certain regions of the United States are exempt from foreign competition in respect to iron and steel products because of their distance from the coasts and the consequent heavy freight charges. As to such localities, the presence or absence of a tariff duty is equally unimportant. It is also a matter of common knowledge, however, that the great producing and consuming markets are so located that the pressure of foreign competition, made possible by low costs and low ocean freight, bears heavily upon them and the industries so located are entitled to that protection which it has been the aim of all republican tariff acts to extend.

Controversy over manganese will not down. The brief filed last week by C. A. Buck, vice president in charge of raw materials, Bethlehem Steel Co., proposing to put manganese ore on the free list and reduce the duty on ferromanganese, has prompted a rejoinder from J. Carson Adkerson, president, American Manganese Producers' association.

Mr. Adkerson declares that "for the United States there is but one solution of the problem of national preparedness as regards manganese, and that is to establish as promptly as possible, as a going industry, the business of utilizing our own abundant supplies of low grade ore."

According to Mr. Buck, manganese ore prior to the current tariff act had been on the free list. At 1 cent per pound on manganese content the duty is equivalent to 100 per cent ad valorem, he contends.

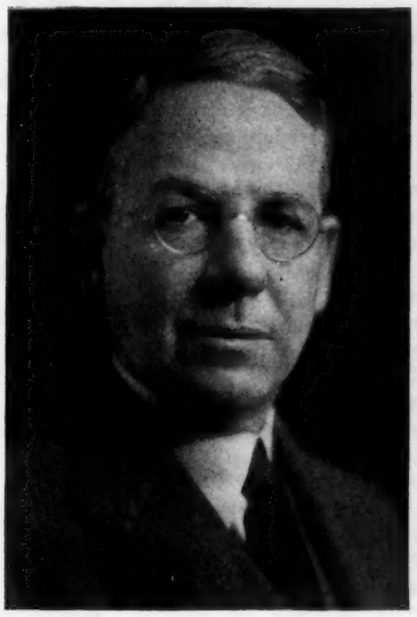
Industrial Men in the Day's News

Andrew W. Robertson, Chairman, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

WORKING his way through college and law school, he now heads the large Westinghouse interests, an achievement indicative of his determination and ambition.

HE BEGAN to practise law in 1910, *became corporation attorney for some of the subsidiaries of the Philadelphia Co., and rose to its presidency in* 1926.

ATTRIBUTES which stood him in good stead in his contact between public and employe in his utility connection are expected to redound to the benefit of his latest affiliation.



LAWS of the Medes and Persians do change. Lawyers sometimes veer their life course. This is borne out in the case of Andrew W. Robertson, who, although trained for the legal profession, finds himself at only 49 years of age occupying the chairmanship of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Mr. Robertson thus makes his second major shift in his industrial career, achieving a remarkable rise in the industrial world as bounded by the Allegheny and Monongahela rivers. The first came when, after practicing law in Pittsburgh for 16 years, the latter part of that time as corporation attorney for constituent interests of the Philadelphia Co., he became president of the latter interest, which is the parent organization of a number of public utilities. With these affiliated subsidiaries, it operates electric light, street railway and gas properties in the Pittsburgh area. That was not so much of a change since he still had plenty of scope for the exercise of his legal talents. Possibly the greater one came when he resigned his Philadelphia Co. connections to become chairman of the board of the Westinghouse interests, to succeed Paul B. Cravath, who had been acting chairman since the death of Guy E. Tripp, June 14, 1927. Mr. Robertson's election to that office was noted in IRON TRADE REVIEW of Jan. 24, 1929.

Apparently the qualities of leadership and fair-mindedness which marked his course with the Philadelphia Co., particularly as president—a difficult office to fill because of its close relation with the lives of so many individuals in the community—were the governing factors in Mr. Robertson's selection. They stamped him as belonging to that new class of executives which considers the good will of the public and of the employe alone compatible to the welfare of the corporation with which he is connected.

All of Mr. Robertson's 49 years have been busy and, born of Scotch parents, he always has been chary of wasting precious moments. He spent his childhood in Panama, N. Y. During his college career at Allegheny college, Meadville, Pa., his spare time largely was occupied with earning his way. He nevertheless managed, by dint of close application and study, to capture a prize in oratory as well as to win his letter on the college football team. Vacations were no less busy than college days. They usually found him selling aluminum kitchen utensils or at work in a saw mill. As demonstrating his ability to think of and conduct numerous activities almost simultaneously, at one time during his school days he conducted a student boarding house, he wrote a weekly column for a Meadville newspaper and kept books for an amusement company at Conneaut Lake park. Immediately after he was graduated from Allegheny college, in 1906, he entered the law school of the University of Pittsburgh. Four years later he was admitted to the bar.

Mr. Robertson entered a law office in Pittsburgh that year, 1910, and three years later became affiliated with the Philadelphia Co.'s organization when he was made attorney for the Duquesne Light Co., its electric light subsidiary. He also became attorney for the Pittsburgh Railways Co., another of Philadelphia Co.'s

interests, and later he was appointed general counsel for all of the Philadelphia Co.'s interests. In 1923 he was made vice president in charge of public relations and three years later he was elected to the presidency, succeeding Arthur W. Thompson when he became president of the United Gas Improvement Co., Philadelphia.

In addition to his numerous business activities Mr. Robertson has been prominent in public affairs of Pittsburgh, especially with the chamber of commerce. With little time for hobbies, Mr. Robertson finds relaxation and rest in his garden in the summer and also devotes a little time to recreations such as golf, horseback riding, music and the reading of scientific books. For the present his official headquarters will remain at Pittsburgh. He is a new director of the Radio Corp. of America.

Men of the Industry

FRANK HUDSON, chief metallurgist, Glenfield & Kennedy Ltd., Kilmarnock, Scotland, has been chosen by the Institute of British Foundrymen to present the annual exchange paper before the 1929 convention of the American Foundrymen's association, to be held at the Stevens hotel, Chicago, April 8 to 11. Mr. Hudson was educated at Rutherford college, Newcastle-On-Tyne, England. He holds a first class certificate in iron and steel manufacture from City and Guilds of London institute. He served a practical metallurgist's apprenticeship with Armstrong-Whitworth & Co., under H. H. Ashdown and Oliver Smalley, on armament and general engineering work.

At the age of 20 he was given his first executive position as melting manager at the Close works, an iron foundry of that company. In 1924 he was appointed metallurgist to the government of Tibet to supervise the installation and manufacture of electric steel at Lhassa. Due to political and religious unrest in the company, the British government advised him not to go. From 1925 to 1927 Mr. Hudson resided in Canada and the United States, being affiliated as metallurgist with the American Brake Shoe & Foundry Co., Chicago; Warren Foundry & Pipe Co., Phillipsburgh, N. J.; and as assistant superintendent for the Wyoming Shovel Works, Wyoming, Pa.

He is a member of the following societies: American Foundrymen's association, American Society for Steel Treating, and the Institute of British Foundrymen. He has contributed several papers on foundry topics and in 1928 was awarded a diploma by the Institute of British Foundrymen for a paper on "Scottish Molding Sands."

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James B. Thorpe has been appointed assistant to the president of the Climax Molybdenum Co., New York.

* * *

James A. Henry has been appointed assistant vice president of the Weirton Steel Co., Weirton, W. Va. W. R. Cunnick has been appointed general manager of sales and G. D. Lummis Jr. has been appointed assistant manager. Mr. Lummis was formerly with the Detroit office of the American Rolling Mill Co.

FRANK HUDSON

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Laurence Mouat resigned recently as sales manager of the P. & F. division of the American Hardware Corp., New Britain, Conn.

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R. D. Klebes, for the past seven years assistant purchasing agent of the American-La France & Foamite Corp., Elmira, N. Y., has been made purchasing agent.

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R. A. Cannon, manager of casting sales for the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., was recently appointed vice president in connection with his present duties.

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John Grilli recently resigned from the South Chicago works of the Illinois Steel Co., Chicago, to become affiliated with H. A. Brassert & Co., 310 South Michigan avenue, Chicago, consulting engineers.

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Burton H. Pease, who for 20 years has been chief inspector at the Farrell, Pa., works of the Carnegie Steel Co., has been transferred to the general offices, Carnegie building, Pittsburgh, in the metallurgical department.

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Philip F. Apfel, recently retired as head of the Electric Heating & Mfg. Co., Sixth and Harrison streets, Seattle, selling the controlling interest to M. H. Chism. Mr. Apfel is an inventor of electric heating appliances.

* * *

H. H. Waldschmidt has been appointed manager of the raw materials department of the Youngstown Sheet & Tube Co., Youngstown, O., to succeed William P. Prescott, who as noted in IRON TRADE REVIEW, resigned to become affiliated with the Koppers Coal Co., Pittsburgh.

* * *

William J. Cronin, for nine years secretary of the New York and New Jersey divisions of the National Metal Trades association, was recently made secretary of the Tri-City Manufacturers' association, Davenport, Iowa, Moline and Rock Island, Ill. He succeeds the late Harry A. Jensen.

* * *

Hugh W. Rankin, formerly with the E. W. Bliss Co., has been appointed Michigan representative, with headquarters at 2-219 General Motors building, Detroit, of the Thomson Electric Welding Co., Lynn, Mass., manufacturer of electric welding machines.

C. W. Hill now represents the Thomson company in New England.

* * *

Maxwell A. Coe, formerly superintendent of the Stanley Rule & Level Co., subsidiary of the Stanley Works, New Britain, Conn., recently was made manager.

Philip B. Stanley recently resigned as vice president of the subsidiary

company, and Mr. Coe will now take over a portion of his work.

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A. L. Haglund recently was elected secretary of the Northwestern Barb Wire Co., Sterling, Ill.

* * *

J. F. Strough, secretary-treasurer of the Timken Roller Bearing Co., Canton, O., has been nominated a director of the Ohio chamber of commerce, to represent manufacturing.

* * *

T. J. Doherty, tariff representative of the American Iron and Steel institute, New York, has established separate offices in the same building, 61 Broadway, room 501.

* * *

J. D. Crawford, formerly representative of the Western Cartridge Co., at Chicago, has become affiliated with the Scovill Mfg. Co., in the Cincinnati territory.

* * *

W. C. Carnahan, superintendent of the Bellaire, O., works of the Carnegie Steel Co., has been renominated a director of the Ohio chamber of commerce for the Southeastern district.

* * *

Edward B. Pollister, general manager of the Busch-Sulzer Bros. Diesel Engine Co., St. Louis, has been appointed a member of the executive committee of the Foreign Trade bureau, Washington.

* * *

T. W. Robinson, vice president of the Illinois Steel Co., Chicago, has accepted a place on the commission of Americans, headed by former Vice President Charles G. Dawes, to reorganize the fiscal affairs of the republic of San Domingo.

* * *

W. K. Swigert, formerly production manager of the Stutz Motor Car Co. of America Inc., Indianapolis, has been appointed manager of the new St. Louis gypsy moth engine assembly plant of the Wright Aeronautical Corp.

* * *

Bernard H. Liskow, factory superintendent, Chevrolet Motor Co., Saginaw, Mich., has been elected president of the Saginaw Engineers' club, of which C. F. Miller is vice president and Frank Niederstedt is secretary-treasurer.

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Arthur O. Miller, formerly vice president in charge of sales for Reeves Bros. Co., Alliance, O., has been elected president of the Petroleum Iron Works Co., Youngstown, O., and Sharon, Pa. He succeeds John L. Considine, who resigned recently and whose plans for the future are indefinite. Other officers are: Vice president, E. E. Shanor; vice president, James A. Connelly; treasurer, H. C. Knowles, and secretary, J. L. Sullivan.

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G. W. Quick, formerly with the Youngstown Pressed Steel Co., Warren, O., has been appointed general manager of the General Pressed Steel Co., Newton Falls., O., J. W. French, likewise formerly with the Youngstown company, is now superintendent.

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Harry A. Gourley, formerly of Detroit, was appointed superintendent of the Canonsburg Steel & Iron Works, Canonsburg, Pa., effective March 6. He succeeds M. P. Wilson, who resigned recently to become affiliated with the Bethlehem Steel Co., at Sparrows Point, Md.

* * *

Albert C. Marble, Curtis & Marble Machine Co., was re-elected president of the Worcester, Mass., branch, National Metal Trades association, at its annual meeting last week. Other officers are: Fred S. Norton, Matthews Mfg. Co., vice president; Donald Tulloch, secretary; and William Arter, Arter Grinding Machine Co., treasurer.

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C. W. Lighthall, of the Hoover Steel Ball Co., Ann Arbor, Mich., was recently elected president of the newly organized Ann Arbor Manufacturers' association. Other officers are: Vice presidents, Francis LaPointe and George Langford; secretary, A. N. Gustine; treasurer, Ralph Miller; and chairman of the membership committee, J. J. Sinn.

* * *

Myron H. Locke, LaCrosse, Wis., has been appointed sales manager of the Esline Steel Building Corp., Oconomowoc, Wis., manufacturer of sheet metal garages, cottages, portable structures, etc. The Esline company, with offices at 610 Michigan street, Milwaukee, recently erected a new plant at Oconomowoc, quadrupling the capacity of its former factory at Barton, near West Bend, Wis.

* * *

E. E. Boone, since 1925 affiliated with the mixed apparatus sales division of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been made gearing apparatus sales manager at the company's R. D. Nuttall works, Pittsburgh. He succeeds J. E. Mullen, resigned. Mr. Boone was graduated from the University of Illinois in 1911 in electrical engineering. He became affiliated with the Westinghouse company the summer following his graduation on the graduate student course. After completing a course in industrial sales, he entered the mining section of that division of which he later became manager. Following several years' activity as manager of the coal and oil section, he was transferred in 1925 to the mixed apparatus sales division.

* * *

Jackson Brown Jr., with headquarters at 701 Kittridge building, Denver, has been appointed representative in Colorado, Utah, Wyoming and northern New Mexico for the Roller-Smith Co., 233 Broadway, New York, manufacturer of electrical measuring instruments, relays and circuit breakers. Its plant is located at Bethlehem, Pa. The Manila Machinery & Supply Co. Inc., Manila, P. I., represents the company in the Philippine islands.

* * *

Sir Arthur Balfour, K. B. E., of the Dannemora Steel Works, Sheffield, Eng., was a guest last week of George Bissett, president of the Bissett Steel Co., 945 East Sixty-seventh street, Cleveland. He formerly was a member of Great Britain's advisory committee on war munitions and visited Cleveland to inspect its steel plants. He is chairman of England's committee on industry and trade. The Bissett Steel Co. is Cleveland representative of Arthur Balfour & Co. Ltd., Sheffield.

* * *

John R. Briggs, of Henry Potts & Co., Philadelphia, was re-elected president of the Philadelphia chapter of the Institute of Scrap Iron and Steel, March 13. Other officers elected are: Vice president, Harry A. Kirschman, of the Allegheny Iron & Metal Co.; secretary, J. B. Partridge Jr., of the Chester Iron Co.; and treasurer, R. M. Marshall, of the Marshall Iron & Metal Co. The executive committee comprises the following: J. V. S. Bishop, Allen R. Hoffer and H. A. MacMullen, of Henry A. Hitner's Sons Co.

* * *

T. D. Lynch, consulting engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been nominated for president of the American Society for Testing Materials. The election will be held by letter ballot and the results will be announced at the annual meeting to be held in June. Mr. Lynch represented the American society at the reorganization meeting of the International Society for Testing Materials, at Amsterdam, Holland, in 1927, at which he delivered the opening address, his subject being "Material Testing as a Stimulus to Research." He has been a member of the American society's executive committee for four years, being a director

(*Concluded on Page* 830)

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

SURFACE COMBUSTION CO., Toledo, O., manufacturer of gas-fired furnaces and gas burners for industrial use, has bought the Webster Engineering Co., Tulsa, Okla. The latter company has manufactured low pressure gas burners for use in power boilers, oil cracking stills and heating boilers. Offices and shops will be retained at Tulsa and the Webster company will operate as a division of the Surface Combustion Co. New officers of the company are: President, Henry O. Loebell vice president and general manager of the Combustion Utilities Corp.; vice president, Frank H. Adams, vice president and general manager of the Surface Combustion Co., and general manager, L. S. Reagan.

* * *

NATIONAL AIR FILTER CO., 1805 Foster avenue, Chicago, has been merged with the Reed Air Filter Co., Louisville, Ky. The headquarters of the company will be in Louisville.

* * *

GENERAL MOTORS OF CANADA, which recently acquired McKinnon Industries, Buffalo and St. Catherines, Ont., will expand the latter plants and add greatly to their output.

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WATEROUS LTD., Brantford, Ont., manufacturer of machinery, has bought the plant of the Edmonton Iron Works. The plant will be remodeled and converted into a modern machine shop.

* * *

PITTSBURGH VALVE, FOUNDRY & CONSTRUCTION CO., Pittsburgh, has been awarded contract for the piping and valve work for the Neville Island, Pittsburgh, project of the Davison Coke & Iron Co.

* * *

PITTSBURGH-DES MOINES STEEL CO., Pittsburgh, has been awarded the contract for acid tank work to be part of the fire protection system at the naval fuel depot, Melville, R. I.

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ALAN WOOD STEEL CO., formed after Koppers Co. acquired Alan Wood Iron & Steel Co. and Rainey-Wood Coke Co., will move its headquarters April 1 to Ivy Rock, Pa. W. F. Rust has been made president; H. C. Thomas, vice president; John W. Logan, secretary and treasurer; S. T. Brown, assistant treasurer; Charles L. Jones, assistant treasurer and auditor; John D. Shaner, D. Bailey, Ira L. Couch and E. E. Long, assistant secretaries.

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HAUSMAN STEEL CO. is the new name adopted by the former Building Products Co., Toledo, O. The company has warehouses in Toledo, and Columbus, O., with stocks of building products and concrete forms.

* * *

WARNER GEAR CO., Muncie, Ind., has leased store room space at 1805 Indiana avenue, Chicago, and thus will open the first of several chain retail stores in the Chicago area. The company manufactures automobile gears and transmissions.

* * *

BATH IRON WORKS CORP., Bath, Me., has gone to a 9-hour day schedule after operating at 8 hours since last October. All departments are on full time. Marine construction is the principal work of the plant.

* * *

NEW ENGLAND AIR TRANSPORT CO., Providence, R. I., has started manufacture of two-motored, ten-passenger airplanes with Wright whirlwind motors, for service between Boston and New York. George H. Armitage is president.

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WHITING CORP., Harvey, Ill., builder of cranes and foundry equipment, will move its New York offices April 1, from the third to the sixth floor at 136 Liberty street. J. Ross Bates, vice president, is in charge.

* * *

COLUMBIA METAL PRODUCTS CO., Chicago, will move to La Porte, Ind., and expects to have its plant in production by May 1. It has leased the plant formerly used by the Great Western Mfg. Co. as a bicycle plant.

* * *

VESTA BATTERY CORP., 1336 South Michigan avenue, Chicago, has closed a 17-year lease, with option, for 107,000 square feet at Narragansett avenue and West Sixty-fifth street, Chicago. The company will erect a modern one-story daylight plant on the property. The company manufactures storage batteries and electrical equipment.

* * *

PARK MFG. CO., Worcester, Mass., manufacturer of door checks and machine screw specialties, has been sold to Thomas Crabtree, owner of the Worcester Taper Pin Co. Mr. Crabtree was a former owner of the Park Mfg. Co., and again assumes control.

* * *

ALABAMA BOILER & CONSTRUCTION CO., Birmingham, Ala., recently incorporated, is formed to do steel plate, boiler and structural fabrication. Further equipment is to be bought to enlarge capacity. F. R. Metzger is president and E. L. Steele engineer.

* * *

PORTER-CABLE MACHINE CO., Syracuse, N. Y., manufacturer of machine tools, saws and sanding machines, has appointed Manning, Maxwell & Moore Inc., 27 North Jefferson street, Chicago, its representative on production lathes in parts of Illinois, Iowa and Indiana.

* * *

WOODROW NIPPLE MFG. CO., 816-24 North Spaulding avenue, Chicago, and the National Nipple Mfg. Corp., 1400 West Fortieth street, Chicago, have reorganized and are conducting business under the new corporate name of Woodrow-National Corp. Max Levin, former president of the Woodrow Nipple Mfg. Co., continues as president of the new corporation. E. L. Cook, former secretary-treasurer of the National Nipple Mfg. Corp., is treasurer, and W. J. Walther, former sales manager of the Woodrow company, is secretary. General offices and main factory are at the North Spaulding avenue address. In addition to the full line of steel and iron nipples and cut pipe the manufacture of perforated extension bars and hangers has been added.

* * *

WILLIAM COOKE & CO. (Canada) LTD., Vancouver, B. C., is planning an electric steel rolling mill development on Lulu island near Victoria, B. C. The first unit, to cost about $750,000 is said to be backed by H. E. Else, head of William Cooke

& Co., Sheffield, Eng., the parent company; F. B. Clegg, president of the Pacific Bolt Co., Vancouver, and managing director of the new company; Charles Danby Hobbs, manager and director; and Frank Else, Western Hardware & Steel Co. Ltd., Vancouver, formerly of William Cooke & Co. British capital back of the company has already established a group of active industries near Vancouver, including the Pacific Bolt Mfg. Co., Vancouver Galvanizing Co., Steel Containers Ltd., and Western Hardware & Steel Ltd. The new plant is to utilize scrap.

* * *

WEAVER BROS. CO., manufacturer of pickling supplies, has moved its plant and equipment from Clinton, Mich., to Adrian, Mich.

* * *

W E. WARNER & SONS, Algonac, Mich., which was organized recently, will specialize in boat fittings and nonferrous castings.

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STANDARD STEEL & RAIL CO., St. Louis, has sold the yard and complete equipment of its predecessor, the Standard Rail & Steel Co., which is being liquidated.

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BURKHEAD MFG. CO., Houston, Tex., manufacturer of sheet metal products, is doubling its plant capacity by improvements designed to add 60,000 square feet of floor space. F. M. Burkhead is president.

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INTERNATIONAL IRON & SUPPLY CORP., exporter of iron and steel, has opened offices at 503 Second National Bank building, Houston, Tex., in charge of D. D. Feldman. M. Feldman, Dallas, Tex., is president.

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BUFFALO PORCELAIN ENAMELING CORP., Buffalo, has installed an electric continuous porcelain enameling furnace. This is a comparatively new development in the enameling field, there being less than 25 in operation.

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COMMONWEALTH STEEL CO., Granite City, Ill., has begun a program of extension and has broken ground for a building adjoining its main plant. It will be used to increase production of locomotive parts. Clarence Howard is president.

* * *

WELLMAN - SEAVER - MORGAN CO., Cleveland, will furnish design plans, specifications, design computations and estimates of quantity and cost for a pontoon gate lifter to handle gates in the Welland ship canal. The gate lifter will be electrically operated from a steam-driven generator plant on the pontoon. It will have four separate hoisting units of 125 tons capacity each, the motors being operated in parallel by a single control, with dynamic braking.

* * *

BENDIX BRAKE CO., South Bend, Ind., announces that all production records will be broken in the first quarter of 1929, which has set a new high record for sales and deliveries in all of the combined companies. The corporation has more than $8,000,000 operating cash on hand.

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MANITOWOC ENGINEERING WORKS, Manitowoc, Wis., has appointed the Condon Bearing & Supply Co., Pittsburgh, as sales representative in western Pennsylvania and West Virginia for cranes, shovels, draglines, trenchoes and clamshell buckets, all built by the Manitowoc company.

* * *

KEWANEE BOILER CO., Kewanee, Ill., has moved its sales rooms and offices from Washington boulevard and Green street, Chicago, to the company's factory at Nineteenth street and Western avenue, Chicago. The former quarters of the Kewanee company have been leased by the General Laundry Machinery Co.

* * *

MILWAUKEE COKE & GAS CO., 187 Greenfield avenue, Milwaukee,, has submitted plans by the Koppers Construction Co., Pittsburgh, to the city building inspector, for a new producer building, 20 x 120 feet, one high story; booster building, 24 x 70 feet, 1-story, and a 40,000-cubic foot gas holder.

* * *

PARKER RUST-PROOF CO. and Wolverine Enameling Co., both of Detroit, are considering a merger and stockholders will act on the plan April 10. Sufficient support is said to be assured to make the merger effective. Consolidation results from demand for a rustproof metal to use under enamel, in automotive, refrigerating and other industries.

* * *

WELLMAN - SEAVER - MORGAN CO., Cleveland, has completed shipment of a 60-foot heavy duty 4-clamp, revolving car dumper to the Detroit Edison Co.'s new Delray power plant at Detroit, where it is now being erected. This dumper is designed to handle open top railway cars of 120 tons capacity of coal, and a tare weight of 40 tons, at the rate of 20 cars per hour, and all coal used in this plant will be dumped by this machine. A similar dumper of 52-foot size and smaller capacity is now under construction in the Wellman shops for the Duke Power Co.'s new River Bend power plant at Mount Holly, N. C.

* * *

WHEELING STEEL CORP., Wheeling, W. Va., has sent its largest tow of steel down the Ohio river, under control of its steamer TRANSPORTER. The tow consists of 17 barges, carrying 11,000 tons of pig iron, billets, pipe, steel and tin plate products. Deliveries will be made at Portsmouth, O., Cincinnati, Louisville, Ky., and Memphis, Tenn.

* * *

CHROME STEEL WORKS, Carteret, N. J., has been taken over by the Canda-Gayley Steel Corp., organized by Abeel Canda and H. Clifford Gayley, who have been active managers of the former company for several years. C. E. Meissner, development engineer of the Chrome Steel Works, is sales manager for the new company.

* * *

ALLIED AVIATION CORP., with $5,000,000 capital, has been formed at St. Louis to own all the capital stock of three companies producing airplanes, aviation accessories and aircraft engines. The companies are Lambert Aircraft Corp., a new company which recently acquired the Mono-Aircraft Co., Moline, Ill.; Aviation Accessories Corp. and Hurricane Aircraft Engine Co., which has taken over the assets of the aircraft engine division of the Velie Motor Co.

* * *

WRIGHT MACHINE CO., Worcester, Mass., manufacturer of metal products, has been purchased by Archibald R. Lemieux and associates, who have organized a new company under a Massachusetts charter. The purchase includes the business and property. The company is one of the best known in the metal trade in Central Massachusetts. Officers of the new company, which will be of the same name, are: Archibald R. Lemieux, president; W. Vernon Thomas, vice president; Louis F. Weber, treasurer, and George A. Gaskill, clerk. Directors include Henry A. Benoit, also a director of the Felter Co.; George F. Wright, president of the George F. Wright Steel Wire Co.; Charles E. Hildreth and George A. Morin of Boston. Archibald R. Lemieux has been treasurer and president of the company since 1924. He was formerly with Reed & Curtis Co., Worcester, as general works manager; the Hampton Co., Springfield, Mass. and he organized the Worcester Mfg. Co. Later Mr. Lemieux reorganized the Mosler Co. of New York.

West Penn Likely to Go to Allegheny

Allegheny Steel Co. has made an offer to stockholders of the West Penn Steel Co., both of Brackenridge, Pa., for stock of the latter company. It is stated that a sufficient number of West Penn stockholders has assented to the proposal of the Allegheny company to assure the latter's obtaining control, although a minority interest is opposed.

Offer of Allegheny Steel Co. provides for the payment of $375 in cash for each share of common stock of West Penn, or $275 in cash and two shares of Allegheny Steel no par common, or $225 in cash and three shares of Allegheny common, or seven and one-half shares of Allegheny common. for each share of West Penn common. For each share of West Penn preferred, $110 in cash is offered or two shares of Allegheny common. In the event that the plan becomes operative, holders of West Penn Steel Co. stock will receive a cash dividend of $25 a share.

The offer requires that stock be deposited with the Union Trust Co., Pittsburgh, by March 20. This time may be extended 60 days, however, at the discretion of the West Penn Steel committee. This body is composed of Julian Burdick, president and director; Clarence H. Young, director; John T. Stanier, director; and Maurice C. Bair, assistant treasurer and director. Both concerns are engaged in the manufacture of high grade sheets for automobile, electrical supplies, and metal furniture requirements.

Start Foundry Unit

More than 1000 guests witnessed the formal opening of the new foundry unit of the Detroit Gray Iron Foundry Co., Detroit, and the pouring of the first alloy steel heat at the plant of the Detroit Alloy Steel Co. March 16. Hugh Martin is president,, and Harry H. Wyatt is secretary-treasurer of both firms. Kenneth L. Clark, sales manager, Norman Kluender, sales engineer and Thomas A. Moorman, metallurgist assisted in the observance to which members of the Detroit Foundrymen's association and friends of the firm were invited. Late in the afternoon, a buffet luncheon and refreshments were served in the restaurant of the new foundry unit. Music was supplied by one of Detroit's leading orchestras.

Reinforcing Institute Announces Program

Discussion of trade practices will be one of the important features of the fifth annual meeting of the Concrete Reinforcing Steel institute at Kenilworth Inn, Asheville, N. C., April 15 to 17. The institute has announced its program for this meeting as follows:

Monday, April 15

MORNING

Meeting of board of directors (Continuing through luncheon)

AFTERNOON

Regional conferences

EVENING

President's annual address
Committee reports
"A Stop Order," by H. G. Moock, vice president, H. M. Ballard Inc., Chicago

Tuesday, April 16

MORNING

Committee reports
"Current Events" by O. W. Irwin, vice president, Truscon Steel Co.
"Engineering Costs" by W. S. Thompson, chief engineer, Kalman Steel Co.
"New Markets for Reinforcing Steel" by W. D. M. Allan, manager, cement products bureau, Portland Cement association

AFTERNOON

Annual Golf tournament
Motor trip through Vanderbilt estate

EVENING

Annual banquet
"New Libraries for Old" by James Schermerhorn, Detroit.

Wednesday, April 17

MORNING

Election of officers and directors
Unfinished business

AFTERNOON

Meeting of board of directors
Motor trip to Chimney Rock
Regional conferences

EVENING

Discussion of concrete ribbed floor construction

Thursday, April 18

MORNING

Trade practice conference under auspices of federal trade commission.

Forging Group Elects

New York, March 19.—At a recent executive meeting of the newly-formed Forging Manufacturers association held at its headquarters in the Grand Central Terminal building, all officers were re-elected for the ensuing year. These include the president, S. P. Howe, president, Camden Forge Co., Camden, N. J., and the secretary-manager, George H. Weiler.

Bethlehem Earnings Up as Plant Rebuilding Concludes

NET income of the Bethlehem Steel Corp. for 1928 after providing $13,658,335 for depreciation and depletion, amounted to $18,585,922, compared with $15,826,142 for 1927. Surplus after preferred dividends of $6,842,500 amounted to $11,743,422, equivalent to $6.52 per share on the common stock compared with $5.02 in 1927. A common stock dividend of 1 per cent amounting to $1,800,000 was declared Jan. 24, 1929, payable May 15, 1929.

Gross sales for the year amounted to $294,778,287, compared with $271,502,891 for 1927. Orders aggregating $295,209,483 were booked in 1928, compared with $280,199,101 in 1927. Unfilled orders on Dec. 31, 1928, totaled $59,040,202, compared with $58,609,006 at the end of 1927.

The consolidated balanace sheet as of Dec. 31, 1928, shows current assets of $168,932,293 as against current liabilities of $33,472,945 or a ratio of 5 to 1. Current assets include $55,539,137 in inventories.

The report points out that the large re-building and modernization program instituted by the Bethlehem Steel Corp. in 1923 was completed in 1928. The cost of additions and improvements to properties in those years totaled $157,032,259, which was paid largely out of earnings and depreciation, maintenance and other reserves, supplemented by the proceeds of $35,000,000 par value of 7 per cent preferred stock sold in 1926.

The report states:

The cash expenditures for additions and improvements to properties during the year totaled $19,943,804. The estimated cost of completing the construction authorized and in progress as of Dec. 31, 1928, is $10,300,000. The construction now in progress comprises numerous miscellaneous items which are incidental to the normal development of the business and which will afford further savings in operating costs.

Operations of Bethlehem Steel Corp. averaged 82.0 per cent of capacity in 1928, compared with 73.6 per cent in 1927 and 81.1 per cent in 1926.

The corporation's rated steel capacity effective Jan. 1, 1929, was 8,000,000 tons per annum as against 7,900,000 tons on Jan. 1, 1928. Its pig iron capacity was increased by 360,000 tons to 6,960,000 tons per annum as of Jan. 1, 1929. Both increases resulted from improvements and more modern designs incorporated in all furnaces which have been rebuilt.

During the year $517,446 was paid in pensions to retired employes. The corporation paid $114,437,334 in wages to its employes in the United States, averaging in number during the year 62,039. Average earnings per hour in 1928 (exclusive of general, administrative and selling forces) were 64.2 cents as against 63.8 cents in 1927.

Raise European Entente Output

Increase of 2,000,000 Tons of Steel Proportioned Among Member Countries—German Syndicates' Indecision May Affect Entente—Erma Reported To Have Raised Prices—Coke Shortage Handicaps Iron and Steel Works in Britain

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, March 19.—(*By Cable*)—The European steel entente has decided to increase annual production by 2,000,000 tons, bringing the total to approximately 31,287,000 tons. The quotas of the various countries participating will be raised in proportion as they now exist. The renewal of agreements by members of German steel syndicates is uncertain, owing to demands made by certain leading companies. Nonrenewal of those agreements would cause difficulties for the European steel entente.

The terms of the European Rail Manufacturers association (ERMA) are reported to have been renewed for six years. Reports that the association has decided to advance prices are unconfirmed.

Due to a shortage of coke following a period of cold weather in Great Britain pig iron production is being handicapped. Supplies from the Middlesbrough district are short. Pig iron business in the Barrow district is good, but the Midland market is quiet. Steelworks are absorbing considerable tonnage. The position of South Wales steelworks is steadily improving. Better conditions also are noted in Scotland. Engineering firms in the Birmingham district complain of a lack of orders. Armstrong, Whitworth & Co. have obtained an order for 20 locomotives for Argentina.

British iron and steel imports in February totaled 163,474 tons, compared with 244,267 tons in January and 183,668 tons in December. Iron and steel exports in February amounted to 417,127 tons, against 421,191 tons in January and 358,743 tons in December.

Iron and steel markets in France and Belgium are firm, although demand generally is quieter than in recent weeks. Berlin reports exports active, Britain and Japan buying semifinished steel.

Shipbuilding Brings Aid to British Industry

BIRMINGHAM, Eng., March 1.—Improved outlook in shipbuilding lends encouragement to the view that the steel trade will expand soon. Nearly 30,000 tons of shipping has been placed on the Tees this week and as all the shipbuilders are believed pledged under the rebate scheme to use British steel this will mean heavy order books for mills.

The admiralty has placed three submarines with Vickers Armstrong Ltd., one with William Beardmore & Co. Ltd., one with Cammell Laird & Co., two sloops with Swan Hunter & Wigham Richardson Ltd., and the machinery for the sloops with Hawthorne Leslie & Co.

Sterling $4.85

Northamptonshire pig iron makers have met little support in their effort to obtain an additional 1s 6d ($0.36) over the price of £2 17s 6d ($13.93) for foundry iron. Consumers are in no hurry to renew their supplies, and smelters express determination to hold out for £2 19s ($14.29) even if it means waiting two months for the business. They consider themselves justified in this attitude on ac-

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, March 18	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$16.25	3 7 0*	$16.49	3 8 0	$16.49	3 8 0	$16.49	3 8 0
Basic	15.76	3 5 0	15.76	3 5 0	15.76	3 5 0	15.76	3 5 0
Basic-bessemer	17.58	3 12 6†	15.76	3 5 0	15.76	3 5 0	15.76	3 5 0
Hematite, Phosphorus 0.02-0.05	17.70	3 13 0	23.66	605*	.....	.....	17.46	3 12 0
SEMIFINISHED STEEL								
Billets	$30.92	6 7 6	$25.46	5 5 0	$25.46	5 5 0	$25.22	5 4 0
Wire rods	41.83	8 12 6	30.92	6 7 6	30.92	6 7 6	30.93	6 7 6
FINISHED STEEL								
Standard rails	$37.59	7 15 0	$31.53	6 10 0	$31.53	6 10 0	$31.53	6 10 0
Merchant bars	1.74c	8 0 0	1.35c	6 3 0	1.35c	6 3 0	1.35c	6 3 0
Structural shapes	1.60c	7 7 6	1.11c	5 1 0	1.11c	5 1 0	1.11c	5 1 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.39c	6 6 0	1.39c	6 6 0	1.38c	6 5 0
Sheets, black, 24 gage	2.28c	10 10 0	2.26c	10 5 0	2.26c	10 5 0	2.50c	11 7 0
Sheets, galvanized, 24 gage, corrugated	2.93c	13 10 0	3.01c	13 13 9	3.01c	13 13 9	3.43c	15 12 0
Bands and strips	2.17c	10 0 0	1.40c	6 7 6	1.40c	6 7 6	1.40c	6 7 6
Plain wire, base	2.06c	9 10 0	1.71c	7 15 0	1.71c	7 15 0	1.65c	7 10 0
Galvanized wire, base	2.93c	13 10 0	2.17c	9 17 6	2.17c	9 17 6	2.17c	9 17 0
Wire nails, base	2.39c	11 0 0	1.80c	8 3 9	1.80c	8 3 9	1.72c	7 16 0
Tin plate, base box 108 pounds	$ 4.37	0 18 0	.....	.....	.....	.....	$ 6.79	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.25	3 7 0	$18.57	475(2)	$16.68	600	$18.50	78
Basic pig iron	15.76	3 5 0	19.94	510(1)	16.96	610	20.87	88
Furnace coke	3.52	0 14 6	5.87	150	5.56	200	5.10	21.50
Billets	31.53	6 10 0	23.07	590	25.99	935	28.72	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.68c	7 15 0	1.36c	755	1.41c	1,085	1.52c	141
Shapes	1.71c	7 17 6	1.26c	700	1.22c	940	1.49c	138
Plates, ship, bridge and tank	1.87c	8 12 6‡	1.54c	855	1.46c	1,125	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.92c	1,620	2.70c	2,080	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.96c	13 12 6	3.69c	2,050	3.84c	2,950	3.78c	350
Plain wire	2.12c	9 15 0	1.89c	1,050	2.08c	1,600	2.48c	230
Bands and Strips	2.17c	10 0 0	1.51c	840	1.76c	1,350	1.77c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 14s 6d ($3.52) f. o. b. Ferromanganese £21 13s, 0d ($105.00) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.75) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

count of the dearness of furnace coke.

Yorkshire furnace fuel is now on the basis of 14s 6d ($3.50) a ton, representing in some cases a rise of 2s 6d ($0.60), compared with old contracts. Coke has become scarce; it is practically impossible to get Yorkshire fuel, although some Derbyshire coke is coming to the Midlands.

Steelworks activity in the Middlesbrough district has meant considerable pressure on furnaces producing basic iron and one firm intends to relieve the situation by transferring one furnace from foundry to basic. With the scarcity of local brands Middlesbrough works are said to be buying from outside sources. Both foundry and hematite iron are in good demand on the Middlesbrough market and ironmasters are in a strong position in regard to prices.

So far they have resisted the temptation of exploiting the situation and quote £3 7s ($16.24) for No. 3. Similarly in the Barrow district stocks have been cleared and the present output is not sufficient for the market so that relighting a furnace at Cleaton Moor is anticipated. Inquiries have been received from the Continent; and France, Belgium, Germany and Italy have placed orders for superior low phosphorus iron.

Semifinished steel makers are receiving a good deal of the business formerly placed with the Continent. Billetmakers have raised their prices, partly on account of dearer fuel but also because their hands have been strengthened as a result of renewed interest. For 2-inch billets £6 10s ($31.52) is now being asked in the Birmingham district, and for sizes over two inches £6 7s 6d ($30.91).

Makers are also firm in their quotation of £6 7s 6d ($30.91) for sheet bars. Birmingham merchants contend that imports have practically ceased. In some cases quotations are not coming through, but it is believed that at least £6 5s ($30.31) will be wanted to deliver Continental billets into this district. Naturally at this price there is little likelihood of business.

Staffordshire finished iron is steadily improving its position, although the capacity is far from being taken up. They are directly concerned with the rising price of pig iron and fuel, and it is fully expected the price of £12 ($58.20) for marked bars, which has stood for about twelve months, will shortly be raised. Crown iron makers will probably follow the lead of the Lancashire district when the opportunity presents itself.

The tin plate trade is in need of a stimulus. Bookings are on the level of 18s ($4.37) to 18s 1½d ($4.40), but a meeting of manufacturers is scheduled for next week, when it is anticipated the price will be advanced in view of the increase in tin plate bars, now selling on the Swansea market at £6 2s 6d ($29.70) per ton delivered. Scrap is scarce and dear, £3 12s 6d ($17.75), delivered South Wales, being the minimum price.

German Pipemakers Alarmed by Krupp's Plan To Start New Mill

BERLIN, Feb. 28.—(*European Staff Service*)—German steel plants are working at 60 to 70 per cent of capacity, a rate which does not leave much space for large profits. One of the most profitable sections of the iron and steel industry so far has been the manufacture of pipe. In order to avoid surplus production, manufacturers of these goods have acquired control of every new pipe plant intending to start output.

Krupps recently announced the intention to establish a new pipe plant, the capacity of which was estimated to be 150,000 to 180,000 tons, compared with a total of 828,000 tons of pipe produced by the whole of the German iron industry in 1928.

So far Krupps has delivered high-grade steel to the Mannesmann pipe works, but in the meantime this company has built two blast furnaces at Huckingen, which are to start operations in April, and the production of which will cause Mannesmann to be no longer dependent on supplies of Krupps' iron.

As a result, Krupps have had to look for another direction in which to sell their steel, which they procured by p'anning to establish the proposed pipe mill. A price war among German pipe mills may result therefrom, which would, of course, mean the termination of the pipe association. It is therefore expected that an agreement between the leading producers will be reached by which Krupps will be compelled to abandon their project and to seek another outlet for their pig iron.

Export business in the meantime has not been active. Quotations for merchant bars have had to be reduced to £6 3s ($29.82), and even at that price no important sales have been effected. On the other hand, semifinished products have shown a firm tendency, and while billets were sold at as high as £5 4s ($25.21), structural shapes continued to be quoted at £5 2s ($24.73), which is cheaper than semifinished products.

Orders from abroad have been reduced, and domestic sales also have been limited, the shortage of funds and the severe frost having their influence. Building activity has come to a standstill, and hopes placed on its revival in the spring are not considerable, owing to lack of funds. The discontinuation of foreign loans to German industry is felt, as the few long-term loans recently raised in the United States were not sufficient to make up for this loss.

Efforts to establish a syndicate of German manufacturers of steel castings, which was expected to have a capacity of 375,000 tons of castings annually, and which was to control domestic prices, have failed, as no agreement could be reached as to quotas for individual plants. The activity of German foundries has declined, and a reduction of output has taken place with most plants.

German Production in 1928 Below 1927

Berlin, March 8.—(*European Staff Service*)—Production of iron and steel in Germany in 1928 showed a marked decrease, due to the stoppage in the Ruhr district at the end of the year. It is to be noted, however, that had production continued at the average rate which prevailed during the greater part of the year, the output still would have been in arrears, but only to a comparatively small extent.

The total output of pig iron in Germany in 1928 showed a decrease of nearly 10 per cent from 1927. It is of interest to note that the highest figure of pig iron production registered in Germany in the present territory was attained in January, 1928, with 1,180,237 metric tons. The year's output was divided as follows: 7,315,524 tons of basic bessemer pig iron, 2,286,262 tons of ferro-alloys, 1,139,361 tons of foundry pig iron, 1,004,337 tons of hematite pig iron, 28,260 tons of direct castings, 15,718 tons of gray forge pig iron, and 14,868 tons of acid bessemer pig iron.

Production of rolled steel products in Germany in 1928 was 10 per cent below 1927. The following table gives monthly and yearly figures.

Mon. ave.	Furnaces on 31st	Pig iron	Steel ingots and castings	Finished steel
*1913	.....	909,640	998,640	970,240
1925	† 83	848,060	1,016,210	853,340
1926	†109	803,625	1,028,470	856,340
1927	†116	1,091,875	1,358,780	1,069,980
1928	†101	984,700	1,209,770	963,550
1928				
Jan.	116	1,180,239	1,469,455	1,098,014
Feb.	115	1,122,384	1,322,695	1,040,874
Mar.	113	1,170,476	1,421,524	1,145,070
April	107	1,045,468	1,161,405	917,673
May	104	1,044,046	1,247,781	986,459
June	103	1,021,350	1,294,583	1,067,844
July	100	1,034,694	1,311,134	1,026,333
Aug.	99	1,030,837	1,329,345	1,061,799
Sept.	99	985,413	1,189,521	940,797
Oct.	99	1,015,895	1,306,338	1,031,891
Nov.	48	267,470	357,158	264,609
Dec.	101	882,950	1,090,630	863,613
Total, revised	.....	11,804,330	14,517,165	11,562,590

*In present boundaries.
†On last day of year.

Prizes Are Awarded by British Institute

London, Eng., March 5.—(*European Staff Service*)—The council of the British Iron and Steel institute has this year awarded the Bessemer gold medal of the institute to the Hon. Sir Charles A. Parsons, K.C.B., O.M., F.R.S. The award is made in recognition of his distinguished services in advancing the science of engineering as applied to the manufacture of iron and steel.

The Williams prize of the Iron and Steel institute, which was founded by Illtyd Williams, on his retirement in 1926, for the encouragement of papers of a practical character, has been awarded to the two papers: "Blast Furnace Practice in Natal," by J. E. Holgate and R. R. F. Walton, and "The New Plant of the Appleby Iron Co., Ltd." by A. Crooke and T. Thomson. The prize, which is of the total value of 100 guineas, has been awarded in equal portions to the authors of these two papers.

River Barges Are Let at Pittsburgh

Pittsburgh, March 19.—February witnessed continued activity in the steel barge market. Although awards last month were smaller than in January, inquiry has increased and prospective work indicates that barge builders will enjoy satisfactory operations for some time. February awards included 27 steel barges and 16 pontoons, involving a total of about 3500 tons of fabricated steel plates and shapes. This brought total awards since Jan. 1 to 83 barges, requiring 10,000 tons of steel.

The feature of February business was the awarding of 25 barges by the Memphis, Tenn. office of the United States engineers to the Dravo Contracting Co. This work will require 3000 tons of plates and shapes.

Follansbee Is Sold up

Pittsburgh, March 19.—Output of the plants of the Follansbee Bros. Co. is satisfactorily sold to July 1, according to the annual report of the company. Report shows net profit in 1928 of $1,535,732 after depreciation, interest and taxes equivalent after preferred dividends to $7.53 per share on 180,000 shares of common, compared with $866,380 in 1927 or $3.81 per share.

By April the company expects to have in operation at Toronto its mill which will permit the rolling of sheets up to 66 inches wide.

Worcester Foundries Off

Worcester, Mass, March 19.—Eleven foundries, composing the Foundry council, report a decrease in the tonnage for January compared with December, and a gain over January, 1928. Comparisons by months for the past year, follow:

1928	Pounds
January	2,914,072
February	3,344,557
March	3,766,107
April	3,504,179
May	3,683,065
June	3,439,880
July	3,465,559
August	3,181,115
September	3,110,968
October	3,709,744
November	3,981,883
December	4,175,119
	42,276,248
1929	
January	3,841,380

Blast Furnace Rebuilt

Youngstown, O., March 19.—Work of rebuilding and enlarging No. 2 blast furnace at the Ohio works of the Carnegie Steel Co. has been completed and the stack will soon be ready for the torch. This completes rebuilding of all six stacks here, they also having been enlarged. Their rated capacities, formerly at 500 tons daily, now have been increased to 750 tons, with some stacks actually producing over 800 tons daily. Total rated pig iron capacity of the Ohio works now is estimated in excess of 1,200,000 tons of basic and bessemer pig iron annually.

February Stokers Low

Washington, March 19.—Sales of mechanical stokers in February decreased from January, according to the department of commerce statistics. Monthly comparisons follow:

	Stokers sold	Fire tube boilers	Water tube boilers
1928			
January	75	20	55
February	85	26	59
Total (2 Mos.)	160	46	114
March	123	31	92
April	88	21	67
May	130	43	87
June	162	78	84
July	186	67	119
August	162	57	105
September	161	68	93
October	100	48	52
November	116	54	62
December	102	34	68
Total (year)	1,490	547	943
1929			
January	97	36	61
February	80	26	54
Total (2 Mos.)	177	62	115

Convention Calendar

April 8-11—American Foundrymen's association. Thirty-third annual convention and exhibition at Hotel Stevens, Chicago. C. E. Hoyt, 222 W. Adams street, Chicago, is executive secretary-treasurer.

April 15-17—Concrete Reinforcing Steel institute. Fifth annual meeting at Kenilworth inn, Asheville, N. C. M. A. Beeman, Tribune Tower, Chicago, is secretary.

April 17-19—National Foreign Trade council. Seventh annual convention at the Lord Baltimore hotel, Baltimore. O. K. Davis, India house, Hanover square, New York, is secretary.

April 24-25—National Metal Trades association. Annual meeting at Drake hotel, Chicago. J. E. Nyhan, Peoples Gas building, Chicago, is secretary.

April 24-26—American Welding society. Annual meeting in Engineering Societies building, New York. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

April 29-May 3—American Chemical society. Annual meeting at Columbus, O. L. Parsons, Post Office box 1515, Washington, is secretary.

May 6-11—Exposition of Chemical Industries, Grand Central Palace, New York.

May 16-18—American Gear Manufacturers' association. Annual meeting at Hotel Statler, Cleveland. T. W. Owen, 3608 Euclid avenue, Cleveland, is secretary.

May 21-22—American Refractories institute. Annual meeting at French Lick Springs hotel, French Lick, Ind. Dorothy A. Texter, 2202 Oliver building, Pittsburgh, is secretary.

May 22-29—American Electrochemical society. Annual meeting at University of Toronto, Toronto, Can. Colin G. Fink, Columbia university, New York, is secretary.

June 3-6—National Association of Purchasing Agents. Fourteenth annual international convention and informashow, Buffalo. George A. Renard, 11 Park Place, New York, is secretary-treasurer.

June 11-15—Third International Foundrymen's congress, London.

June 19-21—American Institute of Chemical Engineers. Annual meeting at Philadelphia.

June 24-28—American Society for Testing Materials. Annual meeting at Chalfonte-Haddon Hall hotel, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Reinforcing Bar Sellers To Discuss Code

Washington, March 19.—Among practices proposed for discussion at the forthcoming trade practice conference for the concrete reinforcing bar industry, to be held by the federal trade commission as Asheville, N. C., April 18, are the following:

Entering into contracts for large quantities of reinforcing steel bars without actual obligation of the buyer to purchase any particular quantity or quantities, or for any particular jobs, for the purpose of securing to the buyer a discriminatory price.

Splitting of fees, commissions, and other payments with engineers, architects and other persons, without the knowledge and consent of all parties to the contract.

Wilful interference with existing bona fide contracts.

Dumping surplus stocks in territory outside of distributors' regular markets, at discriminatory prices.

Failure of the distributors to adhere to their own published prices and submission of more than a single bid price on any one job, even though no charges in specifications have been made.

Secret rebates, commercial bribery and departure from terms of discount.

Misbranding and misrepresentations in connection with the sale of bars.

Enameled Ware Is Up

Washington, March 19.—January shipments of enameled sheet metalware totaled 426,877 dozens, the highest since March, 1928, when the total was 442,689 dozens, according to department of commerce. Monthly comparisons follow:

	In dozens			
1927	Total	White	Gray	Colored
1928				
January	319,871	155,172	132,136	32,563
February	372,848	179,794	131,485	61,569
March	442,689	200,010	152,895	89,784
April	351,034	143,470	125,808	83,756
May	348,661	158,458	116,541	73,662
June	299,078	141,486	95,959	61,633
July	277,684	125,653	108,584	43,447
August	358,811	164,580	134,191	60,040
September	352,484	172,127	130,337	50,020
October	417,387	190,424	166,078	60,885
November	328,875	139,197	123,850	65,828
December	324,445	132,422	136,170	55,853
Tot., 1928	4,193,867	1,902,793	1,552,034	739,040
1929				
January	426,877	203,154	134,544	89,179

A forthcoming issue of the *Journal of Research*, bureau of standards, will contain a description of apparatus for carrying out investigations of thermomagnetic properties of steel. The report points out there is much to be learned of the phenomena associated with the hardening and tempering of steel.

Obituaries

WILLIAM NELSON MOTTER, for 20 years an electrical engineer on the staff of the Allis-Chalmers Mfg. Co., Milwaukee, and nationally known as an inventor and designer of direct current machinery, died March 10 at Milwaukee. He was born in Logansport, Ind., in 1874 and was graduated from Purdue University in 1896, teaching there for two years afterward. Mr. Motter was a member of Tau Beta Pi, national honorary engineering fraternity, a fellow of the American Institute of Electrical Engineers, and a member of the Engineers' Society of Milwaukee.

* * *

William Sheldon Dewing, 83, founder of the Kalamazoo Stove Co., Kalamazoo, Mich., and until a short time ago its president, died recently.

* * *

William F. Soisson, 66, retired banker and president of the Joseph Soisson Fire Brick Co., died March 11 at his home in Connellsville, Pa. He was born in Hollidaysburg, Pa.

* * *

Mrs. Eleanore Clark Wooster, 49, proprietor of the Stamford Pattern & Model Works, Stamford, Conn., died March 14. Mrs. Wooster had been head of the business since the death of her husband 10 years ago.

* * *

William H. Vogel, 84, president of the Wisconsin Machinery & Mfg. Co., Milwaukee, died March 10 in that city. In late years he has been active as a director of the company, in an advisory capacity only.

* * *

Hjalnar Nordenmalm, 54, for 25 years chief engineer of the Standard Steel Car Co., Butler, Pa., died March 12 at his home in that city. He was a native of Minnesota and located in Butler in 1904.

* * *

John W. Hayes, president of the Hayes-Custer Stove & Furnace Co., Bloomington, Ill., died at his home in that city on March 14. He had been president of the company since its organization in 1886.

* * *

Thomas Addenbrook, 82, formerly superintendent of the masonry department of the Edgar Thomson steelworks, Braddock, Pa., of the Carnegie Steel Co., Pittsburgh, died recently in that city. He was born in England, located in this country when 24, and was employed by the Carnegie company until he retired about 12 years ago.

* * *

Amos Kissel Raub, 67, president of the Raub Supply Co., Lancaster, Pa., jobber of plumbers', steamfitters', and tinners' supplies, died recently in that city. Prior to 1921 the sheet metal department of the business which had been conducted as the Sheet Metal & Supply Co., and previously as the Lancaster Sheet Metal Co. was discontinued.

* * *

John E. Pilcher, 84, first vice president of the Simmons Hardware Co., St. Louis, died recently at his home in that city. A native of England, Mr. Pilcher came to this country as a boy of 15. His first job was as a clerk in a drug house, and in 1863 was engaged by the Simmons Hardware Co., with which firm he served continuously for 42 years.

* * *

William H. Chase, 73, who became affiliated with the Cleveland Hardware Co., Cleveland, 47 years ago, died in Los Angeles, Monday, March 11. He is a brother-in-law of Charles E. Adams, president of the company, and formerly was a department head in Cleveland. About 10 years ago he located in Los Angeles to take charge of the company's sales on the Pacific Coast. He was a member of the company's board of directors.

* * *

A. Lewis Jenkins, 47, head of the mechanical engineering department of the college of engineering and commerce, University of Cincinnati, died March 9. He was internationally known for his machine tool research as well as for his heavy machinery designs. His work on the analysis of combined stresses and their application to the practical design of machine tools, hydraulic presses, and punching and shearing equipment is widely quoted.

* * *

William L. Simonton, formerly district executive of the Republic Iron & Steel Co., Youngstown, O., died unexpectedly at Chicago, March 18, aged 63. He was born at Youngstown, O., where he received his early education. As a young man he was employed by the Brown-Bonnell Iron Co., and when this concern was merged in 1899-1900 into the Republic company, he was in charge of the local plant for a short period. In 1904 he was manager of rolling mills for the Republic company in the Indiana gas belt and the Chicago district, with headquarters at Chicago. After several years, he retired from the Republic company and recently he had been an iron and steel broker in that city.

Price Index Shows Rise

Washington, March 19.—February wholesale price index for iron and steel was 96.9, compared with 96.7 for January and 94.9 for February, 1928, taking 1926 at 100, according to the department of commerce.

Structural steel wholesale price index for February was 97, compared with the same for January and 94.5 for last February. Wholesale price index for February for "other metal products" was 98.4, compared with the same for January and 97.9 for February, 1928.

Men of Industry

(*Concluded from Page* 823)

for two years and vice president for the past two years.

* * *

Aaron L. Mercer, Rockford, Ill., has been elected president of the Vulcan Corp., Portsmouth, O., C. E. Dowling, Portsmouth, has been elected secretary, and H. S. Van Camp, Cincinnati, treasurer.

* * *

R. J. Strittmatter, sales manager of the Apex Electrical Mfg. Co., Cleveland, and Edward L. Worthington, of Middleton, Worthington & Co., were elected to the board of directors of the former company at the annual meeting March 18. Other directors elected were: C. G. Frantz, president; W. A. Frantz, first vice president; R. H. Clarke, vice president, Otis Steel Co.; W. T. Holliday, president, Standard Oil Co. of Ohio; S. T. Campbell, president Aetna Rubber Co.; C. A. Kolp, Canton, and George W. Kelsey, Cleveland.

A petition in bankruptcy has been filed against the Foster Iron Works Inc., 795 Stone avenue, Brooklyn, N. Y.

Machinery

Orders Are Well Distributed—Slight Check in Sales Reported—Delivery Situation Continues Tight—Crane Market Is Active

MACHINE tool buying in the East continues at a brisk rate. Substantial orders have been placed by concerns manufacturing electrical equipment, airplane engines and pump machinery. Deliveries on the general run of tools still are extended. In some cases sellers are meeting with difficulty in lining up equipment, particularly grinders and small lathes, to satisfy the requirements of their customers. Buying of tools for installation in shops directly or indirectly connected with the automotive field is showing signs of slowing down. Small-lot business continues to make up the majority of bookings in some districts. In Chicago inquiries are reported in slightly smaller volume. Buying still is diversified. Used tools are moving well.

New York, March 19.—Brisk trading continues to feature the local machine tool market. While, with possibly two or three exceptions, orders have not been large, they have been numerous and well distributed. General Electric Co., Schenectady, N. Y., continues a heavy buyer, with substantial business also being placed by Eclipse Engine Co., East Orange, N. J., manufacturer of airplane engine starters. Worthington Pump & Machinery Corp. has bought at least a dozen machines for Harrison, N. J. Interest is being shown in the large contemplated list of the board of transportation for its shops now under construction in 207th street; it appears, however, that formal inquiries will not be issued for at least another month and possibly later. While machine tool deliveries are being extended, no price changes have been announced during the past week.

Worcester, Mass., March 19.—Machine tool buying continues brisk, although there are signs of a lull. The peak of automotive buying has probably been reached for this season. Business on the books is large, but there has been a slight decline in sales and inquiry from the automotive field. Production tools continue to lead, lathes especially. Few large lists are pending, but total of individual orders holds well. Electrically equipped machinery is selling well. Demand is well spread. One firm advanced delivery dates on its lathe line this week. Grinding machinery is moving satisfactorily. This branch of the machine industry appears one of the steadiest. Small tools are moving to the consumer trade in good volume.

Pittsburgh, March 19.—The machinery market is active, more from the standpoint of inquiry and pending business than in sales. Sellers continue to receive a fairly steady run of small-lot business and work remaining to be closed is of substantial volume. The crane market continues active, with a large number of cranes involved in current inquiries. The largest of these includes a list for the new plant of the National Tube Co. Recent awards, however, have been few.

Chicago, March 19.—Machine tool sales are holding to the high rate established earlier this month, but inquiries were regarded as a shade lighter in the week just closed. Business is widely scattered and from diversified buyers. The Chicago, Burlington & Quincy railroad is in the market for a heavy duty milling machine and four 36-inch shapers. Rock Island is inquiring for a power hammer in addition to its other inquiries. Several important private orders were closed in the Chicago district, one for about $25,000 worth of equipment and others for $15,000 to $20,000 in value. A Davenport, Iowa, concern bought some tools in the local market, and Milwaukee territory is active. General machine shops are busy in the Chicago district and they have been buying some new equipment. Used tools are moving well. No relief is seen in the tight delivery situation for new tools.

Cleveland, March 19.—Belated delivery still prevails in the machine tool market. Users in lining up machines for replacing obsolete equipment want to know the date of shipment before closing negotiations. In many cases used tools are purchased because of the immediate possession afforded but even this situation is becoming tighter. Sellers are finding it more difficult to locate tools suitable for customer requirements. Inquiry still runs toward grinding machines and small lathes and is widely scattered.

CRANE ORDERS PLACED

Thirty-two 8-ton crawler cranes for Pennsylvania railroad, a list noted in last week's issue as involving a large number and placed with three builders, were distributed as follows: 20 to Bucyrus-Erie Co., 10 to Northwest Engineering Co. and two to Browning Crane Corp. Pennsylvania railroad is expected to place 60 cranes, including these, this year.

Six electric overhead cranes of five and 10-ton capacity for Chase Brass & Copper Co., Waterbury, Conn., for installation in a new plant in Cleveland, to Harnischfeger Corp.

Among single orders are: Tramrail equipment, including 375 feet of track and five 1-ton hoists, for plant No. 3 of General Bronze Co., Corona, Long Island, N. Y.,; 130 feet of track for foundry of Wiehl Bros., Grand street, New York; and 1000 feet of additional plated track and five additional window washer units for an exterior system now being constructed for A. Schrader's Son Inc., 470 Vanderbilt avenue, Brooklyn, N. Y., all going to George Purley Morse, 209 McDougal street, Brooklyn, representing the tramrail division of Cleveland Crane & Engineering Co.; 10-ton, 1-motor crane 17½-foot span, for Port Authority of New York; and 5-ton handpower crane, 22½-foot span, for Glens Falls Portland Cement Co., Glens Falls, N. Y., both going to Box Crane & Hoist Corp.; 30-ton locomotive crane for China, placed through Mitsubishi interests, 120 Broadway, and ⅝-yard shovel crane for a Boston contractor, both going to Browning Crane Corp.

CRANE ORDERS PENDING

Forty overhead cranes, approximately, ranging from one to 30 tons in capacity, for proposed 207th street shops to be erected by the board of transportation, New York, specifications expected out sometime after April 1.

Four used locomotive cranes for W. E. Wright Co., Akron, O.

Ten or 12-ton used gasoline crawler crane for Dudley Murphy Co., West Palm Beach, Fla.

Westinghouse Earnings Show Increase

The business of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in 1928 was the best for any 12 months in its history, according to the company's annual report. Sales billed for the year were $189,050,302, and net income was $20,814,940, which figures exceed previous records by $3,500,000 and $2,700,000, respectively.

Owing to a change in the fiscal year, which now ends Dec. 31 instead of March 31, the present report covers officially only the nine-months period extending from April 1 to Dec. 31, 1928, but the figures above given are for the entire year of 1928 in order to provide a basis for comparison with previous full fiscal years.

The company's total current assets are given as $135,679,233 (a gain of over $13,000,000 in nine months), and its total current liabilities are only $17,000,000. The surplus is now $67,000,000, a gain of $10,000,000 in nine months.

The value of unfilled orders on Dec. 31, 1928, was approximately $47,000,000. During the nine-month period the value of orders received exceeded by almost $20,000,000 that of the same period in 1927, due largely to the increase in demand for radio products and industrial motor apparatus.

To Exhibit at Pittsburgh

Among the iron and steel and metalworking interests which will have displays at the 1929 convention of the Building Officials Conference of America, at Pittsburgh April 22 to 26, are Jones & Laughlin Steel Corp., McClintic-Marshall Co., A. M. Byers Co., National Metal Moulding Co., Stronach Nail Co., Carnegie Steel Co., National Steel Fabric Co., Standard Sanitary Mfg. Co., Associated Metal Last Manufacturers, Blaw-Knox Co., and Rail Steel Bar association.

Locomobile Co., Bridgeport, Conn., is to begin producing automobiles on a larger scale.

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

BRIDGEPORT, CONN.—Structural steel for a plant addition for Crane Co. has been awarded to American Bridge Co.

NEW HAVEN, CONN.—United Illuminating Co. has awarded the contract for structural steel for a power house addition to Levering & Garrigues Co. (Noted Feb. 7.)

BALTIMORE—Thomas Hicks & Son, 106 Madison street, has been awarded the contract for the construction of a substation, 45 x 50 feet, for United Railways & Electric Co. A. F. Worthington, 12 East Pleasant street, is architect.

BALTIMORE—Berliner-Joyce Aircraft Corp. of Baltimore, W. W. Moss president, Hearst Tower building, has awarded the contract for the construction of a 1-story airplane manufacturing plant to M. A. Long Co., 10 West Chase street. (Noted Feb. 14).

BALTIMORE—National Sash Weight Corp., 200 Key Highway, incorporated recently, advises that it will manufacture sash weights, counter and elevator weights, etc. Nothing definite has been decided about buildings as yet. (Noted March 7.)

CUMBERLAND, MD.—Potomac Edison Co., M. F. Riley president, Hagerstown, Md., plans to enlarge the local substation, and to construct a high voltage transmission line from here to Lake Lynn power generating station of West Penn Power Co.

BOSTON—Royal Protector Co. 184 Boylston street, incorporated recently, advises that it manufactures a pipe protector and plans entering other fields soon. The company may, in another year, occupy a plant of its own which will require the purchase of new equipment. (Noted Feb. 28).

FALL RIVER, MASS.—Troy Hardware Inc., 157 Pleasant street, incorporated recently, advises that it plans to purchase equipment. (Noted March 14).

LYNN, MASS.—Structural steel for an addition to the municipal power house has been awarded to Eastern Bridge & Steel Co. (Noted Feb. 21.)

NEWTON, MASS.—Cortell Supply Co., incorporated recently, advises that it will purchase equipment. (Noted March 14.)

WORCESTER, MASS.—Pressed Steel Co. has awarded the structural steel contract for a plant to Eastern Bridge & Steel Co.

ALLENDALE, N. J.—Board of council, Boro hall, plans the construction of a pumping station.

AVON, N. J.—Sheet Metal & Roof Craftsman Inc., address care of Warren H. Conover, 114 Liberty street, architect, has awarded the contract for the construction of a 2-story shop to John R. Miller & Son, 312 Tuttle avenue, Spring Lake, N. J. (Noted March 14.)

CAMDEN, N. J.—Rundle Mfg. Co., Twenty-seventh street and Cleveland avenue, Milwaukee, has let the structural steel contract for a foundry and enameling building to McClintic-Marshall Co. (Noted Feb. 21.)

JERSEY CITY, N. J.—Brunswick Laundry Co., address care of architects, plans to build a power house. Peter Simeone & Co., 100 Sip avenue, are architects.

NEWARK, N. J.—Gamon Meter Co., 296 South street, Robert Anderson president, has awarded the general contract for a 2-story plant addition to Fatzler Co., 676 South Sixteenth street.

BROOKLYN, N. Y.—Metal Hose & Tubing Co. Inc., 253 Tillary street, plans the construction of two 3-story plants. Albert Ulrich, 371 Fulton street, is architect.

BROOKLYN, N. Y.—Victor Metal Products Corp., 196 Diamond street, plans to build a 2-story plant. Albert Kunzi, 788 Manhattan avenue, is architect.

LONG ISLAND CITY, N. Y.—Allied Die Casting Corp. has taken a 21-year lease on a proposed 4-story concrete factory, to be erected on a 100 x 180-foot site extending from the northeast corner of Forty-third avenue and Thirty-eighth street to Thirty-ninth street, by Shampan & Shampan, architects. The proposed building will contain 75,000 square feet.

MITCHELL FIELD, N. Y.—United States government quartermaster contemplates the construction of a hangar, shop and warehouse here.

NEW YORK—Kentucky & West Virginia Power Co., 30 Church street, plans a $2,000,000 program including the improvement of its plant at Lothair, Ky., and the construction of a power plant from Lothair to Betsey Lane, Pike county, Ky.

NEW YORK—Kelley Marine Devices Corp., incorporated recently, advises that it plans to rebuild and equip heavy duty electrically driven machine and plate shops on a New York bay property for which negotiations are now under way. Temporary offices are at 15 Park Row, suites 1528-31. (Noted March 7.)

SYRACUSE, N. Y.—Continental Can Co., Carl Conway president, 1 Pershing square, New York, has awarded the general contract for a 2-story plant alteration to Fellows & McGrath, 207 Fellows avenue.

SYRACUSE, N. Y.—Syracuse Bronze Co., incorporated recently, advises that it will manufacture bronze, brass and aluminum castings. The company has rented a plant and is not in the market for machinery or equipment. (Noted March 7.)

UTICA, N. Y.—Skenandoa Rayon Corp., Broad street, plans the installation of power equipment in its proposed two new plant units. Beecher M. Crouse is president.

BRISTOL, PA.—Superior Zinc Corp., Radcliffe and Monroe streets, has awarded the general contract for the rebuilding of its plant damaged in a fire to George Tomlinson & Son, 1713 Samson street, Philadelphia. (Noted Feb. 21.)

LANSDALE, PA.—Franklin Pottery Co. plans to install power equipment in its tile manufacturing plant addition.

PHILADELPHIA—Edgcomb Steel Co., Eleventh and Cambria streets, plans the construction of a 2-story warehouse on a site 156 x 253 feet. Plans are by Clarence E. Wunder.

PHILADELPHIA—General Electric Co., Schenectady, N. Y., has awarded the structural steel contract for a warehouse addition and service shop to be built here to Bethlehem Construction Co. (Noted March 14.)

PHILADELPHIA—Philadelphia & Reading Coal & Iron Co., Reading Terminal building, Andrew J. Maloney president, which announced an electrification program recently, plans to include the construction of a modern generating station. It is said that the site for the plant has been acquired. (Noted March 14).

PITTSBURGH—Aluminum Co. of America, Oliver, building, has purchased a site of 14 acres near New Kensington, Pa., for the erection of an industrial research laboratory.

Resale News

MACHINERY, equipment and sets of dies of William Schimper & Co., manufacturer of metal novelties, 322 Ferry street, Hoboken, N. J., were offered for sale at public auction March 13 and 14. The sale was conducted by Industrial Plants Corp., New York, auctioneer.

Sales Calendar

March 29.—McMyler-Interstate Co., Bedford, O., offering assets for sale, bids at first offering having been refused.

Western States

LOS ANGELES—American Foundry Co., 906 Date street, has added 13,000 square feet of

floor space to its plant enabling it to employ twelve additional molders. (Noted Dec. 20.)

LOS ANGELES—American Brake Shoe & Foundry Co., of California, 1179 East Thirty-second street, has acquired three acres of land on Slauson avenue where it will erect a gray iron foundry.

LOS ANGELES—Mitchell Camera Corp., 6025 Santa Monica boulevard, has broken ground and started work on a 2-story plant, 40 x 240 feet, and 2-story wing 40 x 50 feet, to manufacture motion picture cameras and accessories.

OAKLAND, CALIF.—Bent Concrete Pipe Co., 4367 Lincoln boulevard, South Gate, Los Angeles, has established a branch plant here for the manufacture of centrifugal cast concrete pipe.

PITTSBURG, CALIF.—Columbia Steel Corp. has awarded the structural steel contract for a rolling mill addition to McClintic-Marshall Co.

TRACY, CALIF.—Holly Sugar Corp., Colorado Springs, Colo., plans to install power equipment in a beet sugar mill addition.

CLOVIS, N. M.—Transcontinental Air Transport Co., New York, plans the construction of an airport and a hangar, 150 x 207 feet, to include a machine shop, heating plant, etc. Dunham Construction Co., St. Louis, is general contractor.

SALEM, OREG.—Portland Electric Power Co. will build a warehouse here and plans new lines and replacements.

SEATTLE—Pacific Coast Forge Co. is building a shop at 3800 Iowa street.

SEATTLE—Robinson Gear & Machine Works is considering bids for construction of a 1-story plant at 2917 First avenue south.

TACOMA, WASH.—Tennent Steel Corp. has petitioned city council for a 10 year extension of its present lease on property at East F and Eleventh streets on which the company has its plant. Changes and improvements are contemplated, it is said.

East Central

CHICAGO—Murphy-Ward Dairy Co., 2016 Calumet avenue, plans the installation of power plant equipment in its plant at Dearborn and Twenty-first streets.

CHICAGO—Vesta Battery Corp., 1336 South Michigan avenue, has awarded the general contract to Foltz & Co., 510 North Dearborn street, for the construction of a 2-story manufacturing plant. (Noted March 14.)

CHICAGO—Walstrum Mfg. Corp., 4121 West Lake street, incorporated recently, advises that it plans to manufacture a non-electric vacuum sweeper. The company does not plan the construction of a new plant at this time but will be in the market for additional machinery in the near future. (Noted March 14).

CHICAGO—Thorne Motors Corp., recently incorporated to manufacture gasoline-electric motor vehicles in Chicago, has leased 33,000 square feet at Melvina and Sixty-fifth streets, Chicago, and plans to erect a 1-story manufacturing building on this plot to contain 21,000 square feet of working space. The property is served by an Indiana Belt Line railroad switch track. Ward Thorne, 49 Cedar street, is president of the corporation.

CICERO, ILL.—Merit Co., 4608 West Twentieth street, manufacturer of metal burial caskets, will erect a 3-story plant building with foundations sufficient to carry two additional stories, at Cicero avenue and Augusta street, Chicago. The first unit will contain 100,000 square feet of working space and enable the company to triple its production.

EAST MOLINE, ILL.—Peoples Power Co., R. B. MacDonald, Rock Island, plans to build a new electric substation and transmission line.

BLOOMFIELD, IND.—Power equipment will be installed in the plant addition of Showers Bros. Co. here.

FT. WAYNE, IND.—Capehart Automatic Phonograph Co., 124 East Franklin street, plans to build a 1-story phonograph plant. C. W. Weatherhogg, 250 West Wayne street, is architect.

FT. WAYNE, IND.—General contract has been awarded to Buesching Hagerman & Co., 402 East Superior street, for the construction of a 1-story radio manufacturing plant for Steinite Radio Co., 506 South Wabash avenue, Chicago. (Noted Feb. 28.)

INDIANA HARBOR, IND.—Inland Steel Co. has awarded the structural steel contract for a 10-inch bar mill building to McClintic-Marshall Co.

DETROIT—National Machinery Co., 302 Donovan building, has awarded the contract for the construction of a heat treating building to be erected on Bellevue avenue.

DETROIT—City Pattern Works, 1145 Harper avenue, Fred J. Coulton secretary, plans the construction of a 1 and 2-story plant addition and alterations.

DETROIT—Detroit Sheet Metal Works, 1340 East Milwaukee avenue, plans the construction of a 1 and 2-story plant and office building. Albert Kahn Inc., 1000 Marquette building, is architect.

DETROIT—Abrasive Engineering Corp., 1248 Washington boulevard, incorporated recently, advises that it will manufacture an instrument for grading grinding wheels and provide abrasive wheel surveys, etc. (Noted March 14).

ECORSE, MICH.—Nicholson Terminal & Dock Co. is expanding its dock facilities on the Detroit river completing the project which it started May, 1928. A bond issue of $700,000 will be offered to finance the work. Dock facilities will constitute about 3000 feet of dock structure spanned by gantry cranes.

FORDSON, MICH.—Ford Motor Co. has awarded the general contract for the construction of an addition to its open hearth steel mill to J. W. Butler Construction Co., Free Press building, Detroit. Giffels & Vallet, 604 Marquette building, Detroit, are architects.

JACKSON, MICH.—Sparks-Withington Co., North street and Michigan Central railroad, David Johnson secretary, plans to build a 3-story plant addition.

MUSKEGON, MICH.—Shaw-Walker Co., Division and Western avenues, has awarded the general contract for the construction of a plant addition to O. F. Miller Co., 224 Pratt building, Kalamazoo, Mich.

OWOSSO, MICH.—Plans are under way for the construction of a 1-story power plant for Memorial hospital, W. H. Van Sice chairman, 1116 West Main street.

BELLEVUE, O.—Ohio Cultivator Co., manufacturer of agricultural implements, plans to start construction immediately on a new fitting and grinding room.

CANTON, O.—Hoover Suction Sweeper Co., North Canton, O., plans to install power equipment in its two new 4-story plant units.

CINCINNATI—Highland Body Mfg. Co., Elmwood avenue, has awarded the general contract for a 1-story sheet metal shop to Austin Co., 16112 Euclid avenue, Cleveland.

CLEVELAND—Board of Education, East Sixth and Rockwell streets, F. S. Hogan, director, has awarded the contract for the construction of a foundry and trade school, to H. F. Jurgens, 15430 Edgwater drive. (Noted Dec. 27.)

OVERPECK, O.—Buckeye Mfg. & Foundry Co. suffered fire loss March 9. Owners of the company are Oscar Eberhart, Louis Hurm and John May.

ASHLAND, WIS.—The contract for rebuilding the former blast furnace plant and shipping dock of the Charcoal Iron Co. of America into a polishing and finishing plant for the American Black Granite Co., Minneapolis, has been awarded to Tomlinson & Egan, Ashland. A. E. Appleyard is president and general manager. New equipment is being purchased.

BURLINGTON, WIS.—Layne-Bowler Co., 1023 Wells street, Milwaukee, is successful bidder for improvements in the municipal water system, including a new 16-inch well, 1000 feet deep, with pumps, motors, automatic control, etc.

FOND DU LAC, WIS.—Walter Manowske, 139 Dix street, has plans by Architect F. J. Stepnoski, Fond du Lac, for a new welding shop and general machinery repair building on West Second street.

LINDEN, WIS.—Badger Zinc Co., Platteville, Wis., has started work on a new zinc mill at its Badger mine at this point.

MANITOWOC, WIS.—Preliminary plans have been completed by Architect W. Fred Dolke, 9 South Clinton street, Chicago, for a 3 to 5-story addition, 100 x 170 feet, to the plating plant of the Aluminum Goods Mfg. Co., 1500 Franklin street, Manitowoc. H. L. Vits is general superintendent.

MARSHFIELD, WIS.—Common council rejected the only bid received, March 4, for a two 7½-ton unit municipal garbage reduction plant, at $14,625 by the Jones Odorless Crematory Co., St. Louis. Plans will be changed and new bids asked soon. J. A. Schindler is city clerk.

MILWAUKEE—Wisconsin Gray Iron Foundry Co., Thirty-ninth avenue and Burnham street, West Milwaukee, is building a foundry addition and making some alterations for greater capacity.

MILWAUKEE—Layton Park Motor Co., Twentieth and Forest Home avenues, has plans by Davis & Tuckwell, engineers, 377 National avenue, for a 1-story shop addition, 69 x 126 feet, to its garage and service station.

MILWAUKEE—Pioneer Mfg. Co., 726 Seventy-

-fourth avenue, West Allis, Milwaukee postoffice, manufacturer of automobile accessories, has started work on the erection of a brick and steel plant addition.

MILWAUKEE—Bids are being taken by the Milwaukee Electric Railway & Light Co., 217 Michigan street, for the construction of a 2-story addition, 44 x 67 feet, to the switch house of the Lakeside steam generating plant at St. Francis, near Milwaukee.

MILWAUKEE, WIS.—The village of Whitefish Bay, Milwaukee postoffice, took bids March 18 for the complete construction and equipment of a municipal garbage incinerating plant of 15 tons capacity. A bond issue of $55,000 has been sold for this purpose. T. F. Buckley is village engineer.

MILWAUKEE—Globe Wire & Iron Works, 1009 Atkinson avenue, manufacturing elevator cabs and enclosures, bank and office equipment and other ornamental iron work, has acquired a site of three acres on Capitol drive for a new plant. Nothing definite concerning construction work has been revealed. Gustave A. Trepte is president and general manager.

PRAIRIE DU CHIEN, WIS.—Chas. A. Cahill & Sons, 214 Mason street, Milwaukee, consulting engineers, are about to ask bids on two new boilers, stokers and stack for improvements to the power system of the Prairie du Chien Woolen Mills here.

RACINE, WIS.—Racine Screw Works has completed its reorganization plan and has amended its charter articles to provide for an increase in capital stock to $160,000. The company's plant suffered fire loss in February, 1928. A new plant has been leased and equipped.

WAUSAU, WIS.—A garage, sales and repair building, 2-story, 60 x 150 feet, will be built by the Northern Chevrolet Co., O. B. Huber proprietor, 812 Third street, on a new site. It is planned to start construction about May 1.

Western States

OTTUMWA, IOWA—City of Ottumwa plans the construction of a hydroelectric plant and dam on Des Moines river. Brown & Cook, 106 North Market street, are consulting engineers. J. T. Brady is city engineer.

NORTH MINNEAPOLIS, MINN.—Northern Pacific railroad, Railway building, St. Paul, B. Blum, chief engineer, plans the construction of a boiler washing plant.

KANSAS CITY, MO.—Acme Pipe & Metal Co., 1527 Walnut street, contemplates the construction of a steel fabricating plant.

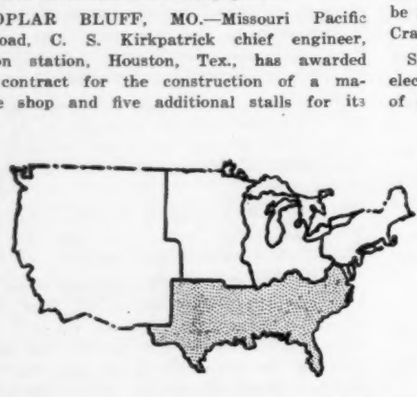
POPLAR BLUFF, MO.—Missouri Pacific railroad, C. S. Kirkpatrick chief engineer, Union station, Houston, Tex., has awarded the contract for the construction of a machine shop and five additional stalls for its roundhouse to Ganger-Korsmo Construction Co., Memphis, Tenn.

ST. LOUIS—Anheuser-Busch Inc., 721 Pestalozzi street, awarded the structural steel contract for a power house addition to Banner Iron Works. (Noted Feb. 7.)

WAHOO, NEBR.—City plans extension and improvements to its electric light plant. Burns & McDonnell Engineering Co., 402 Interstate building, Kansas City, Mo., are engineers.

PAYETTE, IDAHO—Power equipment will be installed in the new plant of the American Crate & Basket Co. here.

SANDPOINT, IDAHO—City council plans an election on $300,000 bonds for the construction of a municipal power plant.



Southern States

GADSDEN, ALA.—Ratliff Sheet Metal Works, Sam Ratliff manager, plans the construction of a 2-story tin shop, 30 x 100 feet, on East Broad street.

MOBILE, ALA.—Todd Shipyards Corp., 25 Broadway, New York, plans the installation of power equipment in extensions and improvements to its branch here.

DECATUR, GA.—Agnes Scott college plans the construction of a power plant, etc., and has engaged Robert & Co., Bona Allen building, Atlanta, Ga., as engineers. (Noted Feb. 28.)

OWENSBORO, KY.—Ken-Rad Tube & Lamp Corp. plans the erection of a 4-story addition to its lamp plant to accommodate the radio tube branch of its business.

MANGUM, LA.—Creola Carbon & Gasoline Corp., care of B. A. Irwin, 2 Giddings Lane building, Shreveport, La., plans to install air compressors, pumping units and other power equipment in its new plant here.

MONROE, N. C.—Seaboard Air Line railroad, Union station, Savannah, Ga., plans to build a power plant here.

AUSTIN, TEX.—City of Austin, Adam R. Johnson manager, plans improvements to its water and electrical distribution systems. An addition to the facilities of the central power plant is planned.

BEAUMONT, TEX.—Magnolia Petroleum Co., Dallas, Tex., will install power equipment in addition to its expansion program at its oil refining plant here, to include a pumping plant, gas converting plant, boiler plant, etc. (Noted March 7.)

EL PASO, TEX.—El Paso Electric Co., F. J. Gannon manager, has selected the site for a new plant to have a generating capacity of 25,000 kilowatts. Contract for installing generating equipment has been awarded to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. (Noted March 14).

FENTRESS, TEX.—San Antonio Power & Light Co. has acquired the electric plant of the Fentress Gin & Power Co. and will erect a substation.

HOUSTON, TEX.—Burkhead Mfg. Co., 1920 Harrington street, manufacturer of sheet metal, has awarded the contract for the construction of a plant addition, 85 x 380 feet, to J. R. Braffett.

CLIFTON FORGE, VA.—Chesapeake & Ohio railroad, Richmond, Va., plans to build locomotive shops here and receives bids until March 22.

RICHMOND, VA.—Standard Paper Mfg. Co., Hull street, plans to install power equipment in its mill addition.

RICHMOND, VA.—Virginia Electric & Power Co. has acquired the Virginia-Carolina Power Co. of Virginia and plans hydroelectric development on Roanoke river.

Canada

BURNABY, B. C.—W. G. Swan, engineer, Birks building, Vancouver, B. C., is preparing plans for a steel plant to be located on the Boundary road here for Montreal, Que., and British Columbia syndicate.

RUSKIN, B. C.—British Columbia Power Corp., Hastings and Carrall streets, Vancouver, B. C., has awarded contract to Stewart Cameron & Co. and Armstrong & Morrison Co., Vancouver, for the construction of a dam in the Stave river here, in connection with hydroelectric power development.

VANCOUVER, B. C.—Richfield Oil Co., First avenue, False Creek, is having plans prepared by J. W. Freak for the erection of an oil storage plant, here.

VANCOUVER, B. C.—Detailed plans of the hydroelectric power development on the Pend Oreille river by the West Kootenay Power & Light Co. Ltd., will involve the construction of a power plant to develop 80,000 horsepower, near the confluence of that river and the Salmon river. The project also will entail construction of a dam 175 feet high, power house and installation of necessary equipment.

VANCOUVER, B. C.—It is reported that a deal involving the immediate expenditure of $1,000,000 and believed to be the prelude of an ultimate expenditure of between $4,000,000 and $5,000,000 in the development and supply of hydropower in the Northern Okanagan valley from Shusway Falls, was closed here a few days ago. Control of the Canadian Hydroelectric Corp., Vernon, B. C., by this deal passes from the Ralph A. Blanchard and

associates of Portland, Oreg., to R. E. Welcy & Co. Inc., of Los Angeles, and other United States Pacific coast investment bankers.

VICTORIA, B. C.—British Columbia Electric Power & Light Co. has let contract to Parfitt Bros. Ltd., 1303 Gladstone avenue, for the erection of a power distributing plant at the corner of Government and Bay streets, here.

WINNIPEG, MAN.—City Engineer's department is preparing plans for a waterworks pumping station on McPhillips street near Logan. A new pumping unit of 12,500,000-gallons-per-day capacity will be installed.

BRANTFORD, ONT.—J. M. A. Lefebvre Ltd., 298 Murray street, is contemplating the erection of a manufacturing plant here.

BRANTFORD, ONT.—Brantford Roofing Co., Sydenham street, is considering plans for the erection of a factory on Pearl street. Building to be 40 x 105 feet.

HAMILTON, ONT.—Frid Construction Co. Ltd., Clyde block, has been awarded contract for the erection of a plant addition for the Canadian Drawn Steel Co. Ltd., Gerrard street. Architect is Stewart McPhie, Sun Life building.

HAMILTON, ONT.—Pigott Construction Co., 83 Pigott building, has awarded subtrades in connection with assembly building and transformer station on Myler street here, for the Canadian Westinghouse Co. Ltd. Building to be 1-story, 87 x 290 feet, reinforced concrete, steel and brick construction. Architects are B. H. & F. Prack, 1311 Pigott building. (Noted Feb. 14.)

KITCHENER, ONT.—Canadian Goodrich Co. has announced plans for the erection of a 4-story addition here, in which new equipment will be installed.

NORTH BAY, ONT.—Canadian Pacific railroad, main office at Montreal, Que., is planning the expenditure of $2,000,000 this year in this district, which will include improvements and additions to shops here and the erection of a roundhouse at Sudbury, Ont.

OJIBWAY, ONT.—Further additions to the wire plant of the Canadian Steel Corp. here will be made at an early date, according to R. S. Rider, vice president of the corporation. The improvements will include the installation of equipment for the manufacture of electric weld, reinforcing fabric, chain link, industrial fencing, gates and posts.

PETERBOROUGH, ONT.—Bids will be called soon by the Western Clock Co., Hunter street, for a 4-story plant addition, 60 x 180 feet. Architects, B. H. & F. Prack, 1311 Pigott building, Hamilton, Ont.

TORONTO, ONT.—Ferranti Electric Co., 25 Noble street, proposes to erect a new manufacturing plant as soon as a suitable site has been selected.

TORONTO, ONT.—Dominion Radiator & Boiler Co., 1322 Dufferin street, has taken out a permit for the erection of a cupola building and other additions to its plant here. Construction work is underway. (Noted Feb. 14.)

TORONTO, ONT.—Horwood & White, 229 Yonge street, have been appointed architects to prepare plans for the erection of a 2-story plant on Fleet street, for the Standard Radio Corp.

WALKERVILLE, ONT.—Chrysler Corp., Detroit, is preparing to build another unit early this year in connection with its proposed plant here. The first unit is nearing completion and the installation of machinery is underway.

MONTREAL, QUE.—Ross & MacDonald, 1 Belmont street, are preparing plans for an addition to the plant of Simmons Ltd., 400 St. Ambroise street, to be 3-story and basement, 70 x 120 feet.

Recent Incorporations

CHICAGO—Anderson Furnace Co. Inc., 4609 Elston avenue, has been incorporated with $15,000 capital to manufacture and deal in stoves, furnaces, etc., by D. F. Cysewski.

CHICAGO—Richard James Mfg. Co., 2726 North Ashland avenue, has been incorporated with $50,000 capital to manufacture and deal in sheet metal specialties, by Richard James.

CHICAGO—Duralite Products Corp., 4624 Sheridan road has been incorporated with $10,000 capital to manufacture and deal in tiles of metal, etc., by J. C. Pressler.

PARIS, ILL.—Edgar County Fuel-less Motor Co., 1213 South Main street, has been incorporated with $25,000 in perferred stock and $25,000 in common stock to manufacture and deal in fuel-less motors by John Willard.

BOSTON—Maynard Equipment Co. Inc. has been incorporated with 200 shares no par value stock to manufacture and deal in mechanical equipment, supplies, etc., by George E. Maynard, 86 Nye street, New Bedford, Mass.

BOSTON—Onthank-Rich Co. has been incorporated with 700 preferred shares and 1000 shares no par value stock to manufacture and install marine engines, motors, etc., by C. Franklin Onthank, Chestnut, Hill, Mass.

BOSTON—Barostat Co. has been incorporated with $10,000 capital to manufacture valves, switches electrical and mechanical apparatus by Alexander J. Tigges, University club.

BOSTON—Multi-Hydro Washing Machine Co. has been incorporated with 2500 shares no par value stock to manufacture washing machines and machinery, by Otto F. Dehle, 237 Common street, Watertown, Mass.

BROCKTON, MASS.—Brockton Silent Automatic Corp. has been incorporated with $10,000 preferred stock and $10,000 common stock to manufacture machinery, devices, etc., for automatic heat and refrigeration, by Adolph E. Anderson, 97 French avenue.

LOWELL, MASS.—Norse-Coburn Steel Co. has been incorporated with $30,000 capital to manufacture, fabricate, and deal in steel mill supplies, steel products, etc., by Frank Y. Morse, 466 Beacon street, Lowell.

NEWTON CENTER, MASS—Beacon Motor Equipment Co. Inc. has been incorporated with $50,000 capital to manufacture auto parts and all kinds of accessories, by Franz Schorr, 1 Siegel street.

SOMERVILLE, MASS.—Connecting Rod & Armature Exchange Inc. has been incorporated with $10,000 capital to manufacture connecting rods, armatures, auto parts, etc., by George R. Goodwin, 184 Warwick road, Melrose, Mass.

SPRINGFIELD, MASS.—C. & M. Metal Products Corp. has been incorporated with $25,000 capital to manufacture agricultural, electrical and mechanical metal products by Arthur S. Cann, 73 Carew Terrace.

DETROIT—Detroit Precision Tool Co., 729 Meldrum avenue, has been incorporated with $25,000 capital by Roger Beebe.

DETROIT—France Due-Fone Co., 1719 Dime Bank building, has been incorporated with $5000 capital to manufacture a device for synchronization of sound with moving pictures, by Charles H. France.

DETROIT—Radio Specialties Co., 175 East Jefferson avenue, has been incorporated with $50,000 capital to manufacture and deal in radios, parts and equipment, by Don M. Norton.

New Trade Publications

GRINDERS—Samuel C. Rogers & Co., Buffalo, has issued an illustrated price list for the current year. It describes two new products, a knife grinder and a segmental wheel chuck.

ELECTRIC MOTORS—Reliance Electric & Engineering Co., Cleveland, calls attention in a bulletin to its enclosed fancooled motor. The claim is that the motor will keep clean and can be used in any situation without being clogged.

ALLOY STEEL DIPPER TEETH— A type of dipper teeth made of a special alloy is featured in a current bulletin by the Nugent Steel Castings Co., Chicago. The teeth have an interlock and clinch point and are made in two or three parts. Illustrations show the parts and assembly.

DROP HAMMERS—Erie Foundry Co., Erie, Pa., manufacturer of steam drop hammers, has prepared and is distributing a bulletin calling attention to various changes in design of its drop hammers and betterments in construction to improve output and give greater efficiency of operation. It is illustrated and a table of standard dimensions is provided.

RIVETING HAMMERS—Riveting by the use of pneumatic hammers is covered in a bulletin by the Chicago Pneumatic Tool Co., New York. An improved hardened and ground valve is featured as an additional provision for smoother operation and more sensitive control. Features of construction are illustrated and a table of specifications is included.

TURRET LATHES—Profits from replacement of machine tool equipment is discussed in a bulletin issued by the Warner & Swasey Co., Cleveland. Illustrations are provided of cases where replacement was of much profit and suggestions are made to show how new machines may increase production and profits. The bulletin is illustrated by halftones of various machines tools made by this company.

Pipe and Tube Prices—Plate Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized. Extra 5 per cent granted in the 4th quarter 1927 and 1st quarter 1928 discontinued April 2, 1928.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLING

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 and 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ to 3¾-inch	56 off
4-inch	59 off
4½ to 6-inch	48 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. On 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	63 off
1¼ and 1½-inch	55 off
1¾-inch	39 off
2 and 2¼-inch	34 off
2½ and 2¾-inch	42 off
3-inch	48 off
3¼ and 3½-inch	50 off
4-inch	53 off
4½, 5 and 6-inch	42 off

SEAMLESS HOT ROLLED

1¾-inch	39 off
2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ and 3½-inch	56 off
4-inch	59 off
4½, 5 and 6-inch	48 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
21-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c
Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.	

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot.....	.20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot....	.20c
Plates ordered 7.65 pounds square foot	.30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, classes A-B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates	1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection	No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra	.10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with reentrant angles)

Additional extra	.20c

Model 24-P ejection type press, having box 100" long, 20" wide, 42" deep. Finished bales measure 20" x 14" x 14" minimum. Can be equipped with power operated loading hopper.

LOGEMANN SCRAP METAL PRESSES

Hydraulically compressed scrap commands at all times the *best price*, and can be conveniently stored and held for favorable markets; it is easily handled; it practically eliminates corrosion; it saves much time in remelting; cars can be easily loaded to capacity.

***LOGEMANN Presses* are built in several types and sizes to suit all requirements.**

You cannot go wrong on a LOGEMANN—it's a money maker from the day it is set in operation.

PIONEERS!

LOGEMANN Scrap Metal Presses, pioneers in this industry, enjoy an enviable reputation for long life and economical operation. They are in daily use in practically every large sheet mill, stamping plant, scrap yard, and in metal-working establishments of all kinds.

Our many years of accumulated experience, and services of our Engineering Department are at the disposal of all plants accumulating metal scrap of any kind.

LOGEMANN BROTHERS COMPANY, 3126 Burleigh St., MILWAUKEE, WIS.

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Carborundum Co., The, Niagara Falls, N. Y.
Norton Co., Worcester, Mass.

ACCUMULATORS
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
Air Reduction Sales Co., 342 Madison Ave., New York City.
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Air Reduction Sales Co., 342 Madison Ave., New York City.
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
Air Reduction Sales Co., 342 Madison Ave., New York City.
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Summerill Tubing Co., Bridgeport, Pa.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM BRONZE (Acid Resisting)
Duriron Co., Inc., The, Dayton, Ohio.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Petroleum Iron Works Co., The, Sharon, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

ANVILS (Cast Steel)
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

ARCHES (Suspended)
Detrick, M. H., Co., 140 S. Dearborn St., Chicago, Ill.

ARCHITECTS (Industrial)
Austin Co., The, 16112 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.

BABBITT METAL
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Williams Alloy Products Co., The, Elyria, Ohio.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Alloy)
Central Alloy Steel Corp., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.

BARS (Concrete Reinforcing)
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Migret, Rene, 7 Boulevard DeFontaine, Charleroi, Belgium.
Nicetown Plate Washer Co., Inc., Juaniata & Clarissa Sts., Nicetown, Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.

BARS (Iron)—See IRON (Bar)

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Pacific Coast Steel Co., Hunter-Dulin Bldg., San Francisco, Calif.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Migret, Rene, 7 Boulevard DeFontaine, Charleroi, Belgium.
Phoenix Iron Co., The, 20 So. 15th, Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.

BEARING METAL
Williams Alloy Products Co., The, Elyria, Ohio.

BEARINGS (Ball)
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Hyatt Roller Bearing Co., Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.
Williams Alloy Products Co., The, Elyria, Ohio.

BEARINGS (Motor)
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Tapered Roller)
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS AND BUSHINGS (Brass and Bronze)
Erie Bronze Co., 402 W. 19th St., Erie, Pa.
Williams Alloy Products Co., The, Elyria, Ohio.

BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Construction Co., The, Union Trust Bldg., Pittsburgh, Pa.

BILLETS (Alloy and Carbon Steel)
Central Alloy Steel Corp., Massillon, O.
Hausman & Wimmer Co., The, Clark Bldg., Pittsburgh, Pa.
Washburn Wire Co., Phillipsdale, R. I.

BILLETS (Die Stock Steel)
Hausman & Wimmer Co., The, Clark Bldg., Pittsburgh, Pa.

BILLETS (Forging)
Bethlehem Steel Co., Bethlehem, Pa.
Central Alloy Steel Corp., Massillon, O.
Erie Forge Co., Erie, Pa.
Hausman & Wimmer Co., The, Clark Bldg., Pittsburgh, Pa.
Heppenstall Forge & Knife Co., 47th and Hatfield Sts., Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

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